

STATE OF TENNESSEE



NPDES PERMIT

MODIFIED
No. TN0027278

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

Tennessee Department of Environment and Conservation
Division of Water Pollution Control
401 Church Street
6th Floor, L & C Annex
Nashville, Tennessee 37243-1534

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger: **Cartwright Creek - Grasslands STP**
is authorized to discharge: **treated domestic wastewater from Outfall 001**
from a facility located: **in Franklin, Williamson County, Tennessee**
to receiving waters named: **Harpeth River at mile 68.8**
in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.
This permit shall become effective on: **November 1, 2010**
This permit shall expire on: **November 30, 2011**
Issuance date: **October 22, 2010**

Paul E. Davis, Director
Division of Water Pollution Control

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GMDa
TN0027278.DOC

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1 NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS

The Cartwright Creek - Grasslands STP is authorized to discharge treated domestic wastewater from Outfall 001 to the Harpeth River at mile 68.8. Discharge 001 consists of treated municipal wastewater from a treatment facility with a design capacity of 0.25 MGD. Discharge 001 shall be limited and monitored by the permittee as specified below:

| Effluent Characteristics | Effluent Limitations | | | | | | Monitoring Requirements | | |
|-------------------------------------------------|------------------------------|---------------------------------|-----------------------------|--------------------------------|----------------------------|-------------------------------|-------------------------|-------------|----------------|
| | Monthly Average Conc. (mg/l) | Monthly Average Amount (lb/day) | Weekly Average Conc. (mg/l) | Weekly Average Amount (lb/day) | Daily Maximum Conc. (mg/l) | Daily Minimum Percent Removal | Measurement Frequency | Sample Type | Sampling Point |
| CBOD ₅ (summer) | 5.0 Report | 10 — | 7.5 — | 15 — | 10.0 Report | 40 — | 3/week | composite | effluent |
| CBOD ₅ (winter) | 10.0 Report | 21 — | 15.0 — | 31 — | 20.0 Report | 40 — | 3/week | composite | effluent |
| Ammonia as N (summer) | 2.0 Report | 4 — | 3.0 — | 6 — | 4.0 Report | — | 3/week | composite | effluent |
| Ammonia as N (winter) | 5.0 Report | 10 — | 7.5 — | 16 — | 10.0 Report | — | 3/week | composite | effluent |
| Total Nitrogen (a) (summer) – 0 Reuse | 1.9 (b) Report | Report | — | — | Report | — | 2/month | composite | effluent |
| Total Nitrogen (a) (summer) – Tier 1 Reuse | 2.1 (b) Report | Report | — | — | Report | — | 2/month | composite | effluent |
| Total Nitrogen (a) (summer) – Tier 2 Reuse | 3.0 (b) Report | Report | — | — | Report | — | 2/month | composite | effluent |
| Total Nitrogen (a) (winter) | Report | Report | — | — | Report | — | 2/month | composite | effluent |
| Insoluble TKN (summer) | Report | — | — | — | — | — | 2/month | composite | effluent |
| Total Phosphorus (as P) (summer) – 0 Reuse | 3.5 (c) Report | Report | — | — | Report | — | 2/month | composite | effluent |
| Total Phosphorus (as P) (summer) – Tier 1 Reuse | 4.0 (c) Report | Report | — | — | Report | — | 2/month | composite | effluent |
| Total Phosphorus (as P) (summer) – Tier 2 Reuse | 5.7 (c) Report | Report | — | — | Report | — | 2/month | composite | effluent |
| Total Phosphorus (as P) (winter) | Report | Report | — | — | Report | — | 2/month | composite | effluent |
| Insoluble Phosphorus (as P) (summer) | Report | — | — | — | — | — | 2/month | composite | effluent |
| Suspended Solids | 30 Report | 63 — | 40 — | 83 — | 45 Report | 40 — | 3/week | composite | effluent |
| Sanitary Sewer Overflows, Total Occurrences | Report | | | | | | continuous | visual | NA |
| Dry Weather Overflows, Total Occurrences | Report | | | | | | continuous | visual | NA |
| Bypass of Treatment, Total Occurrences | Report | | | | | | continuous | visual | NA |

Note: Summer = May 1 – Oct. 31 and winter = Nov. 1 – Apr. 30. The permittee shall achieve CBOD₅ and TSS of at least 85 percent removals, on a monthly average basis.

Total Nitrogen and total phosphorus monitoring – report quarterly influent and effluent average concentrations, mass loadings, and percentage removals based on quarterly monitoring.

(a) The permittee shall achieve the indicated total nitrogen limits for summer conditions, along with an annual average treated effluent total nitrogen limit ≤ 15 lb/day, after 18 months from the permit's effective date. In the meanwhile prior to the 18 month deadline, the permittee shall monitor and report its total nitrogen mass loading discharged pursuant to 2/month monitoring.

(b) The permittee shall achieve the total nitrogen values after 18 months from the permit's effective date. For the first 18 months of the permit, the permittee shall monitor and report the total nitrogen.

(c) The permittee shall achieve the total phosphorus values after 18 months from the permit's effective date. For the first 18 months of the permit, the permittee shall monitor and report the total phosphorus.

Tier 1 Reuse = >0.0 to 0.10 mgd reuse

Tier 2 Reuse = >0.10 to 0.25 mgd reuse

| Effluent Characteristics | Effluent Limitations | | | Monitoring Requirements | | |
|---------------------------------|------------------------|----------------------|---------------------------|-------------------------|-------------|----------------|
| | Monthly Average (mg/L) | Daily Minimum (mg/L) | Daily Maximum (mg/L) | Measurement Frequency | Sample Type | Sampling Point |
| E. coli (cfu/100 ml) | 126 | — | 941 | 5/week | grab | effluent |
| Chlorine Residual, Total (mg/l) | — | — | 0.24 (a) Instantaneous | 5/week | grab | effluent |
| Settleable Solids (ml/l) | — | — | 1.0 | 5/week | grab | effluent |
| Dissolved Oxygen (mg/l) | — | 6.0 Instantaneous | — | 5/week | grab | effluent |
| pH (s.u.) | — | 6.0 | 9.0 | 5/week | grab | effluent |
| Flow (MGD) | Report | — | Report | 7/week | continuous | influent |
| | Report | — | Report | 7/week | continuous | effluent |

(a) Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

The treated effluent discharged to the golf course shall be monitored by the permittee as specified below:

| <u>Parameter</u> | <u>Monthly Average</u> | <u>Daily Maximum</u> | <u>Measurement Frequency</u> | <u>Sample Type</u> | <u>Sampling Point</u> |
|-----------------------------|----------------------------|--------------------------|----------------------------------|------------------------|---------------------------|
| Flow (mgd) | Report | Report | 7/week | daily | STP effluent |
| <i>E. coli</i> (cfu/100 ml) | 23 | 126 | 1/week (a) | grab | STP effluent |

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. Non-compliance with established *E. coli* limits should be reported by the permittee only when the concentration of the *E. coli* group in any individual sample exceeds 126 per 100 ml and when the monthly average exceeds 23 per 100 ml as a running 30 day average. The permittee must submit records of the 30 day running average with their monthly operating reports (MORs).

(a) 1/week monitoring frequency applies if a separate disinfection process dedicated to the reuse water is used. When the *E. coli* monitoring requirement is less than 5 samples per month, the permittee shall report minimum, arithmetic average, and maximum values.

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. The concentration of the *E. coli* group after disinfection shall not exceed 126 cfu per 100 ml as the geometric mean calculated on the actual number of samples collected and tested for *E. coli* within the required reporting period. The permittee may collect more samples than specified as the monitoring frequency. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an *E. coli* group concentration of less than one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the *E. coli* group in any individual sample shall not exceed a specified maximum amount. A maximum daily limit of 487 cfu per 100 ml applies to lakes and Exceptional Tennessee Waters. A maximum daily limit of 941 cfu per 100 ml applies to all other recreational waters.

There shall be no distinctly visible floating scum, oil or other matter contained in the wastewater discharge. The wastewater discharge must not cause an objectionable color contrast in the receiving stream.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner that prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 *et seq.* and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 *et seq.*

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the State of Tennessee published required detection levels (RDLs) for any given effluent characteristics, the results of analyses below the RDL shall be reported as Below Detection Level (BDL), unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed.

For CBOD₅ and TSS, the treatment facility shall demonstrate a minimum of 85% removal efficiency on a monthly average basis. This is calculated by determining an average of all daily influent concentrations and comparing this to an average of all daily effluent concentrations. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{average of daily effluent concentration}}{\text{average of daily influent concentration}} \right] \times 100\% = \% \text{ removal}$$

The treatment facility will also demonstrate 40% minimum removal of the CBOD₅ and TSS based upon each daily composite sample. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{daily effluent concentration}}{\text{daily influent concentration}} \right] \times 100\% = \% \text{ removal}$$

1.2 MONITORING PROCEDURES

1.2.1 Representative Sampling

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

Samples and measurements taken in compliance with the monitoring requirements specified above shall be representative of the volume and nature of the monitored discharge, and shall be taken at the following location(s):

Influent samples must be collected prior to mixing with any other wastewater being returned to the head of the plant, such as sludge return. Those systems with more than one influent line must collect samples from each and proportion the results by the flow from each line.

Effluent samples must be representative of the wastewater being discharged and collected prior to mixing with any other discharge or the receiving stream. This can be a different point for different parameters, but must be after all treatment for that parameter or all expected change:

- a. CBOD₅ samples can be collected before disinfection to avoid having to seed the samples and dechlorinate if chlorine is used.
- b. The chlorine residual must be measured after the chlorine contact chamber and any dechlorination. It may be to the advantage of the permittee to measure at the end of any long outfall lines.
- c. Samples for *E. coli* can be collected at any point between disinfection and the actual discharge.
- d. The dissolved oxygen can drop in the outfall line; therefore, D.O. measurements are required at the discharge end of outfall lines greater than one mile long. Systems with outfall lines less than one mile may measure dissolved oxygen as the wastewater leaves the treatment facility. For systems with dechlorination, dissolved oxygen must be measured after this step and as close to the end of the outfall line as possible.
- e. Total suspended solids and settleable solids can be collected at any point after the final clarifier.

- f. Biomonitoring tests (if required) shall be conducted on final effluent.

1.2.2 Sampling Frequency

Where the permit requires sampling and monitoring of a particular effluent characteristic(s) at a frequency of less than once per day or daily, the permittee is precluded from marking the "No Discharge" block on the Discharge Monitoring Report if there has been any discharge from that particular outfall during the period which coincides with the required monitoring frequency; i.e. if the required monitoring frequency is once per month or 1/month, the monitoring period is one month, and if the discharge occurs during only one day in that period then the permittee must sample on that day and report the results of analyses accordingly.

1.2.3 Test Procedures

- a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.
- b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR, Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.
- c. Composite samples must be proportioned by flow at time of sampling. Aliquots may be collected manually or automatically. The sample aliquots must be maintained at ≤ 6 degrees Celsius during the compositing period.

1.2.4 Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date and time of sampling;
- b. The exact person(s) collecting samples;
- c. The dates and times the analyses were performed;
- d. The person(s) or laboratory who performed the analyses;
- e. The analytical techniques or methods used, and;
- f. The results of all required analyses.

1.2.5 Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance

of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Pollution Control.

1.3 REPORTING

1.3.1 Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using Discharge Monitoring Report (DMR) forms or an electronic program supplied by the Division of Water Pollution Control. Submittals shall be postmarked or sent electronically no later than 15 days after the completion of the reporting period. The top two copies of each report are to be submitted. A copy should be retained for the permittee's files. DMRs and any communication regarding compliance with the conditions of this permit must be sent to:

**TENNESSEE DEPT. OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
COMPLIANCE REVIEW SECTION
401 CHURCH STREET
L & C ANNEX 6TH FLOOR
NASHVILLE TN 37243-1534**

The first DMR is due on the 15th of the month following permit effectiveness.

DMRs and any other report or information submitted to the division must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

The electronic submission of DMRs will be accepted only if approved in writing by the division. For purposes of determining compliance with this permit, data submitted in electronic format is legally equivalent to data submitted on signed and certified DMR forms.

1.3.2 Additional Monitoring by Permittee

If the permittee monitors any pollutant specifically limited by this permit more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

1.3.3 Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

1.3.4 Monthly Report of Operation

Monthly operational reports shall be submitted on standard forms to the appropriate Division of Water Pollution Control Environmental Field Office in Jackson, Nashville, Chattanooga, Columbia, Cookeville, Memphis, Johnson City, or Knoxville. Reports shall be submitted by the 15th day of the month following data collection.

1.3.5 Bypass and Overflow Reporting

1.3.5.1. Report Requirements

A summary report of known or suspected instances of overflows in the collection system or bypass of wastewater treatment facilities shall accompany the Discharge Monitoring Report. The report must contain the date and duration of the instances of overflow and/or bypassing and the estimated quantity of wastewater released and/or bypassed.

The report must also detail activities undertaken during the reporting period to (1) determine if overflow is occurring in the collection system, (2) correct those known or suspected overflow points and (3) prevent future or possible overflows and any resulting bypassing at the treatment facility.

On the DMR, the permittee must report the number of sanitary sewer overflows, dry-weather overflows and in-plant bypasses separately. Three lines must be used on the DMR form, one for sanitary sewer overflows, one for dry-weather overflows and one for in-plant bypasses.

1.3.5.2. Anticipated Bypass Notification

If, because of unavoidable maintenance or construction, the permittee has need to create an in-plant bypass which would cause an effluent violation, the permittee must notify the division as soon as possible, but in any case, no later than 10 days prior to the date of the bypass.

1.3.6 Reporting Less Than Detection

A permit limit may be less than the accepted detection level. If the samples are below the detection level, then report "BDL" or "NODI =B" on the DMRs. The permittee must use the correct detection levels in all analytical testing required in the permit. The required detection levels are listed in the Rules of the Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200-4-3-.05(8).

For example, if the limit is 0.02 mg/l with a detection level of 0.05 mg/l and detection is shown; 0.05 mg/l must be reported. In contrast, if nothing is detected reporting "BDL" or "NODI =B" is acceptable.

1.4 COMPLIANCE WITH SECTION 208

The limits and conditions in this permit shall require compliance with an area-wide waste treatment plan (208 Water Quality Management Plan) where such approved plan is applicable.

1.5 REOPENER CLAUSE

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 307(a)(2) and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation or sludge disposal requirement so issued or approved:

- a. Contains different conditions or is otherwise more stringent than any condition in the permit; or
- b. Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

Pursuant to inflow/infiltration upgrades and/or treatment system enhancements for additional total nitrogen and total phosphorus removal, the division may reopen and modify the permit as noted in Attachment 1.

2 GENERAL PERMIT REQUIREMENTS

2.1 GENERAL PROVISIONS

2.1.1 Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of Water Pollution Control (the "director") no later than 180 days prior to the expiration date. Such forms shall be properly signed and certified.

2.1.2 Right of Entry

The permittee shall allow the director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;
- b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and
- c. To sample at reasonable times any discharge of pollutants.

2.1.3 Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Pollution Control. As required by the Federal Act, effluent data shall not be considered confidential.

2.1.4 Proper Operation and Maintenance

- a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.
- b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and or other technology based effluent limitations such as those in State of Tennessee Rule 1200-4-5-.09.

2.1.5 Treatment Facility Failure (Industrial Sources)

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

2.1.6 Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

2.1.7 Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

2.1.8 Other Information

If the permittee becomes aware of failure to submit any relevant facts in a permit application, or of submission of incorrect information in a permit application or in any report to the director, then the permittee shall promptly submit such facts or information.

2.2 CHANGES AFFECTING THE PERMIT

2.2.1 Planned Changes

The permittee shall give notice to the director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants, which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

2.2.2 Permit Modification, Revocation, or Termination

- a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.
- b. The permittee shall furnish to the director, within a reasonable time, any information which the director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the director, upon request, copies of records required to be kept by this permit.
- c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.
- d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

2.2.3 Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

- a. The permittee notifies the director of the proposed transfer at least 30 days in advance of the proposed transfer date;
- b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and
- c. The director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), "Signatories to permit applications"; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

2.2.4 Change of Mailing Address

The permittee shall promptly provide to the director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

2.3 NONCOMPLIANCE

2.3.1 Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable state and federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2.3.2 Reporting of Noncompliance

- a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to

the Division of Water Pollution Control in the appropriate Environmental Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The Environmental Field Office should be contacted for names and phone numbers of environmental response team).

A written submission must be provided within five days of the time the permittee becomes aware of the circumstances unless the director on a case-by-case basis waives this requirement. The permittee shall provide the director with the following information:

- i. A description of the discharge and cause of noncompliance;
 - ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
 - iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.
- b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.3.2.a above, the permittee shall report the noncompliance on the Discharge Monitoring Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

2.3.3 Overflow

- a. **"Overflow"** means any release of sewage from any portion of the collection, transmission, or treatment system other than through permitted outfalls.
- b. Overflows are prohibited.
- c. The permittee shall operate the collection system so as to avoid overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic overflows (greater than 5 events per year) or would otherwise overload any portion of the system.
- d. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment

to a Monthly Operating Report submitted to the local TDEC Environmental Field Office. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

- e. In the event that more than 5 overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Pollution Control EFO staff to petition for a waiver based on mitigating evidence.

2.3.4 Upset

- a. **"Upset"** means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;
 - iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and
 - iv. The permittee complied with any remedial measures required under "Adverse Impact."

2.3.5 Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.3.6 Bypass

- a. **"Bypass"** is the intentional diversion of waste streams from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- b. Bypasses are prohibited unless all of the following 3 conditions are met:
 - i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;
 - ii. There are no feasible alternatives to bypass, such as the construction and use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment downtime or preventative maintenance;
 - iii. The permittee submits notice of an unanticipated bypass to the Division of Water Pollution Control in the appropriate Environmental Field Office within 24 hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the director, if possible, at least 10 days before the date of the bypass.
- c. Bypasses not exceeding permit limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 2.3.6.b.iii, above.

2.3.7 Washout

- a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.
- b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Pollution Control in the appropriate Environmental Field Office within 24 hours by telephone. A written submission must be provided within five days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

2.4 LIABILITIES

2.4.1 Civil and Criminal Liability

Except as provided in permit conditions for "***Bypassing***," "***Overflow***," and "***Upset***," nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2.4.2 Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or the Federal Water Pollution Control Act, as amended.

3 PERMIT SPECIFIC REQUIREMENTS

3.1 CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a Grade III certified wastewater treatment operator and the collection system shall be operated under the supervision of a Grade I certified collection system operator in accordance with the Water Environmental Health Act of 1984.

3.2 POTW PRETREATMENT PROGRAM GENERAL PROVISIONS

As an update of information previously submitted to the division, the permittee will undertake the following activity.

- a. The permittee shall submit the results of an Industrial Waste Survey (IWS) in accordance with 40 CFR 403.8(f)(2)(i), including any industrial users (IU) covered under Section 301(i)(2) of the Act. As much information as possible must be obtained relative to the character and volume of pollutants contributed to the POTW by the IUs. This information will be submitted to the Division of Water Pollution Control, Pretreatment Section within one hundred twenty (120) days of the effective date of this permit. Development of a pretreatment program may be required after completion of the industrial user review. All requirements and conditions of the pretreatment program are enforceable through the NPDES permit.
- b. The permittee shall enforce 40 CFR 403.5, "prohibited discharges". Pollutants introduced into the POTW by a non-domestic source shall not cause pass through or interference as defined in 40 CFR Part 403.3. These general prohibitions and the specific prohibitions in this section apply to all non-domestic sources introducing pollutants into the POTW whether the source is subject to other National Pretreatment Standards or any state or local pretreatment requirements.

Specific prohibitions. Under no circumstances shall the permittee allow introduction of the following wastes in the waste treatment system:

- i. Pollutants which create a fire or explosion hazard in the POTW;
- ii. Pollutants which will cause corrosive structural damage to the treatment works, but in no case discharges with pH less than 5.0 unless the system is specifically designed to accept such discharges.
- iii. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the treatment system resulting in interference.

- iv. Any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment works.
 - v. Heat in amounts which will inhibit biological activity in the treatment works resulting in interference, but in no case heat in such quantities that the temperature at the treatment works exceeds 40°C (104°F) unless the works are designed to accommodate such heat.
 - vi. Any priority pollutant in amounts that will contaminate the treatment works sludge.
 - vii. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
 - viii. Pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
 - ix. Any trucked or hauled pollutants except at discharge points designated by the POTW.
- c. The permittee shall notify the Tennessee Division of Water Pollution Control of any of the following changes in user discharge to the system no later than 30 days prior to change of discharge:
- i. New introductions into such works of pollutants from any source which would be a new source as defined in Section 306 of the Act if such source were discharging pollutants.
 - ii. New introductions of pollutants into such works from a source which would be subject to Section 301 of the "Federal Water Quality Act as Amended" if it were discharging such pollutants.
 - iii. A substantial change in volume or character of pollutants being introduced into such works by a source already discharging pollutants into such works at the time the permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the publicly owned treatment works, and on any anticipated impact on the effluent discharged from such works. If this discharge necessitates a revision of the current NPDES permit or pass-through guidelines, discharge by this source is prohibited until the Tennessee Division of Water Pollution Control gives final authorization.

3.3 SLUDGE MANAGEMENT PRACTICES

- a. The permittee must comply with 40 CFR 503 *et seq.* Sludge shall be sampled and analyzed at a frequency dependant both on the amount of sludge generated annually and on the disposal practice utilized. Whenever sampling and analysis are required by 40 CFR 503, the permittee shall report to the division the quantitative data for the following parameters:

| | | | |
|----|------------|-----|----------------------------------------------------------------|
| 1) | Arsenic | 7) | Nickel |
| 2) | Cadmium | 8) | Selenium |
| 3) | Copper | 9) | Zinc |
| 4) | Lead | 10) | Nitrite plus Nitrate, NO ₂ , + NO ₃ as N |
| 5) | Mercury | 11) | Total Kjeldahl Nitrogen, as N |
| 6) | Molybdenum | 12) | Ammonia, NH ₃ , as N |

This sludge analysis must be submitted by February 19th of each calendar year. This information shall be submitted to the Division of Water Pollution Control, Central Office, 401 Church Street, 6th Floor Annex, Nashville TN 37243-1534, Attention: Sludge Coordinator, Municipal Facilities Section.

- b. Land application of sludge shall halt immediately if any of the following concentrations are exceeded:

| POLLUTANT | CONCENTRATION (mg/kg ¹) |
|-----------|----------------------------------------|
| Arsenic | 75 |
| Cadmium | 85 |
| Zinc | 7500 |
| Copper | 4300 |
| Lead | 840 |

| POLLUTANT | CONCENTRATION (mg/kg ¹) |
|------------|----------------------------------------|
| Mercury | 57 |
| Molybdenum | 75 |
| Nickel | 420 |
| Selenium | 100 |
| | |

1 Dry Weight Basis

Monthly average pollutant concentrations shall not exceed Table 3 of 40 CFR §503.13. If they are exceeded cumulative pollutant loading rates are to be calculated and recorded and shall not exceed Table 2 of 40 CFR §503.13 for the life of the land application site.

- c. If land application is the final disposition of the wasted sludge, the permittee shall provide pathogen reduction, sludge stabilization and comply with land and crop usage controls as listed in 40 CFR Part 503, as authorized by the Clean Water Act. Records must be maintained by the permittee that indicate compliance or non-compliance with this rule. If the permittee is required to report to EPA, copies of all reports should be sent to the division, at the address listed in paragraph 1 of this section.
- d. Before land applying municipal sludge the permittee must obtain approvals for each site(s) in writing from the division using the latest revision of Guidelines for

Land Application or Surface Disposal of Biosolids, unless the sludge being land applied meets the pollutant concentrations of 40 CFR 503.13(b)(3), the Class A pathogen requirements in 40 CFR 503.32(a), and one of the vector attraction reduction requirements in 40 CFR 503.33 (b)(1) through (b)(8).

- e. Reopener: If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2) of the Clean Water Act.
- f. Notice of change in sludge disposal practice: The permittee shall give prior notice to the director of any change planned in the permittee's sludge disposal practice. If land application activities are suspended permanently and sludge disposal moves to a municipal solid waste landfill, the permittee shall contact the local Division of Solid Waste Management office address for other permitting and approvals (see table below):

| Division of Solid Waste Management | | | |
|------------------------------------|-----------------------------------|------------|----------------|
| Office | Location | Zip Code | Phone No. |
| Chattanooga | 540 McCallie Avenue, Suite 550 | 37402-2013 | (423) 634-5745 |
| Jackson | 1625 Hollywood Drive | 38305 | (731) 512-1300 |
| Cookeville | 1221 South Willow Avenue | 38506 | (931) 432-4015 |
| Columbia | 2484 Park Plus Drive | 38401 | (931) 380-3371 |
| Johnson City | 2305 Silverdale Road | 37601 | (423) 854-5400 |
| Knoxville | 3711 Middlebrook Pike | 37921 | (865) 594-6035 |
| Memphis | 2510 Mt. Moriah Road, Suite E-645 | 38115-1511 | (901) 368-7939 |
| Nashville | 711 R.S. Gass Boulevard | 37243-1550 | (615) 687-7000 |

The current method of sludge disposal is to a municipal solid waste landfill (or co - composting facility). As such, this method of disposal is controlled by the rules of the Tennessee Division of Solid Waste Management (DSWM) and Federal Regulations at 40 CFR 258. If the permittee anticipates changing its disposal practices to either land application or surface disposal, the Division of Water Pollution Control shall be notified prior to the change. A copy of the results of pollutant analyses required by the Tennessee Division of Solid Waste Management (DSWM) and / or 40 CFR 258 shall be submitted to the Division of Water Pollution Control.

3.4 PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has

discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream. The minimum sign size should be two feet by two feet (2' x 2') with one-inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Pollution Control. The following is given as an example of the minimal amount of information that must be included on the sign:

Permitted CSO or unpermitted bypass/overflow point:

UNTREATED WASTEWATER DISCHARGE POINT
Cartwright Creek LLC, - Grasslands STP
(615) 261-8600
NPDES Permit NO. TN0027278
TENNESSEE DIVISION OF WATER POLLUTION CONTROL
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Nashville

NPDES Permitted Municipal/Sanitary Outfall:

OUTFALL 001 - TREATED MUNICIPAL/SANITARY WASTEWATER
Cartwright Creek LLC, - Grasslands STP
(615) 261-8600
NPDES Permit NO. TN0027278
TENNESSEE DIVISION OF WATER POLLUTION CONTROL
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Nashville

No later than sixty (60) days from the effective date of this permit, the permittee shall have the above sign(s) on display in the location specified.

3.5 NUTRIENT MANAGEMENT PLAN (NMP)/REPORTING

Pursuant to the requirements delineated in Attachment 1, the permittee shall develop/implement a Nutrient Management Plan (NMP) with reporting for its wastewater treatment plant.

3.6 ANTIDEGRADATION

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 1200-4-3-.06, titled "Tennessee Antidegradation Statement," and in consideration of the department's directive in attaining the greatest degree of

effluent reduction achievable in municipal, industrial, and other wastes, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other state or federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

4 DEFINITIONS AND ACRONYMS

4.1 DEFINITIONS

A "**bypass**" is defined as the intentional diversion of waste streams from any portion of a treatment facility.

A "**calendar day**" is defined as the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

A "**composite sample**" is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over a 24-hour period. Under certain circumstances a lesser time period may be allowed, but in no case, less than 8 hours.

The "**daily maximum concentration**" is a limitation on the average concentration in units of mass per volume (e.g. milligrams per liter), of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

"**Degradation**" means the alteration of the properties of waters by the addition of pollutants or removal of habitat. Alterations not resulting in the condition of pollution that are of a temporary nature or those alterations having *de minimus* impact (not measurable or less than 5 percent loss of assimilative capacity due to a single discharger or less than 10 percent reduction for multiple dischargers) will not be considered degradation. Degradation will not be considered *de minimus* if a substantial loss (more than 50 percent) of assimilative capacity has already occurred.

"**Discharge**" or "discharge of a pollutant" refers to the addition of pollutants to waters from a source.

A "**dry weather overflow**" is a type of sanitary sewer overflow and is defined as one day or any portion of a day in which unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall occurs and is not directly related to a rainfall event. Discharges from more than one point within a 24-hour period shall be counted as separate overflows.

An "**ecoregion**" is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

The "**geometric mean**" of any set of values is the n^{th} root of the product of the individual values where "n" is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

A "**grab sample**" is a single influent or effluent sample collected at a particular time.

The "**instantaneous maximum concentration**" is a limitation on the concentration, in milligrams per liter, of any pollutant contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "**instantaneous minimum concentration**" is the minimum allowable concentration, in milligrams per liter, of a pollutant parameter contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "**monthly average amount**", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

The "**monthly average concentration**", other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

A "**one week period**" (or "**calendar-week**") is defined as the period from Sunday through Saturday. For reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

"**Pollutant**" means sewage, industrial wastes, or other wastes.

A "**quarter**" is defined as any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.

A "**rainfall event**" is defined as any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A "**rationale**" (or "fact sheet") is a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency's permit decision.

A "**reference site**" means least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

A "**reference condition**" is a parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

A "**sanitary sewer overflow (SSO)**" is defined as an unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall.

"**Sewage**" means water-carried waste or discharges from human beings or animals, from residences, public or private buildings, or industrial establishments, or boats, together with such other wastes and ground, surface, storm, or other water as may be present.

"**Severe property damage**" when used to consider the allowance of a bypass or SSO means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass or SSO. Severe property damage does not mean economic loss caused by delays in production.

"**Sewerage system**" means the conduits, sewers, and all devices and appurtenances by means of which sewage and other waste is collected, pumped, treated, or disposed.

A "**subecoregion**" is a smaller, more homogenous area that has been delineated within an ecoregion.

"**Upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

The term, "**washout**" is applicable to activated sludge plants and is defined as loss of mixed liquor suspended solids (MLSS) of 30.00% or more from the aeration basin(s).

"**Waters**" means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

The "**weekly average amount**", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar week when the measurements were made.

The "**weekly average concentration**", is the arithmetic mean of all the composite samples collected in a one-week period. The permittee must report the highest weekly average in the one-month period.

4.2 ACRONYMS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval

30Q5 – 30-day minimum, 5-year recurrence interval

7Q10 – 7-day minimum, 10-year recurrence interval

BAT – best available technology economically achievable

BCT – best conventional pollutant control technology

BDL – below detection level

BOD₅ – five day biochemical oxygen demand

BPT – best practicable control technology currently available

CBOD₅ – five day carbonaceous biochemical oxygen demand

CEI – compliance evaluation inspection

CFR – code of federal regulations

CFS – cubic feet per second

CFU – colony forming units

CIU – categorical industrial user

CSO – combined sewer overflow

DMR – discharge monitoring report

D.O. – dissolved oxygen

E. coli – *Escherichia coli*

EFO – environmental field office

LB (lb) - pound

IC₂₅ – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms

IU – industrial user

IWS – industrial waste survey

LC₅₀ – acute test causing 50% lethality

MDL – method detection level

MGD – million gallons per day

MG/L (mg/l) – milligrams per liter

ML – *minimum level of quantification*

ml – milliliter

MLSS – mixed liquor suspended solids

MOR – monthly operating report

NODI – no discharge

NOEC – no observed effect concentration

NPDES – national pollutant discharge elimination system

PL – permit limit

POTW – publicly owned treatment works

RDL – required detection limit

SAR – semi-annual [pretreatment program] report

SIU – significant industrial user

SSO – sanitary sewer overflow

STP – sewage treatment plant

TCA – Tennessee code annotated

TDEC – Tennessee Department of Environment and Conservation

TIE/TRE – toxicity identification evaluation/toxicity reduction evaluation

TMDL – total maximum daily load

TRC – total residual chlorine

TSS – total suspended solids

WQBEL – water quality based effluent limit

Attachment 1

NUTRIENT MANAGEMENT PLAN (NMP)/REPORTING

At a minimum, the permittee shall develop/implement as soon as possible the Nutrient Management Plan (NMP) requirements presented in this attachment for enhanced control of the Outfall 001 treated wastewater total nitrogen and phosphorus. The NMP shall be oriented toward maximizing the use of its existing facilities such that changing operations/usages may result in decreases in the discharged treated wastewater total nitrogen and phosphorus. The division acknowledges that the existing treatment system may not have the flexibility to achieve biological denitrification without the addition of supplementary unit processes. As such, the permit includes a 18 month compliance schedule for achieving the total nitrogen and total phosphorus Outfall 001 discharge requirements (based on the assumption that the elevated inflow/infiltration (I/I) problem will not be solved during the permit's duration). If the permittee were able to substantially reduce its I/I, the division may reopen and modify the permit total nitrogen and total phosphorus limits/monitoring requirements, subject to applicable public participation. Additionally, the division may modify the permit (during its term or upon renewal) to include higher total nitrogen and/or total phosphorus concentrations without triggering antibacksliding provisions.

The permittee's NMP at a minimum shall address the following elements to maximize wastewater nutrients removal:

- Develop a list of potentially applicable nutrient control mechanisms for additional total nitrogen and total phosphorus removal. This evaluation must include investigational options/requirements, and timing/schedule/performance considerations.
- Evaluation of permittee's historical wastewater characteristics, e.g. variations in strength and mass loadings, especially treatment plant performance during the summer season (May through October).
- Results from literature and discussions with others, including municipalities, consultants will be evaluated in developing/implementing the permittee's enhanced nutrients control program.
- Treatability/testing results from bench, pilot and/or the full-scale wastewater treatment plant regarding improved summer season nutrient control, e.g., operation at alternative food:microorganism ratios or sludge ages, alternative/supplementary basin(s)/facilities usage/temporary pumping, chemicals addition, and supplementary monitoring.
- Identification of increased permittee treatment system monitoring to provide for enhanced nutrient control, e.g., multi-point dissolved oxygen monitoring points to ensure satisfactory operating conditions in anoxic zones, biological nitrification/denitrification regions, and multi-point pH/alkalinity monitoring/supplementing.
- Ongoing correlations of the wastewater treatment plant's operational/treatment data to provide for an increased understanding of the nature of the wastewater nutrients, control methods and cost-effectiveness.
- Define treated effluent TSS characteristics in terms of insoluble total nitrogen and phosphorus contents, variability and additional control options.

The following are NMP enhancement requirements for the treated effluent:

- Total Nitrogen – treatment enhancements/advanced controls are expected to be required to consistently achieve the TMDL's 15 lb/day total nitrogen annual average limitation and 1.9 mg/l average monthly discharge requirement.
- Total Phosphorus – identify treatment enhancements/advanced controls to consistently achieve for the summer season a monthly average treated effluent of 3.5 mg/l as P.

The permittee shall develop and submit a NMP report to the division's Water Pollution Control - Permits Section (Nashville Environment Field and Central Offices) within 9 months from the permit's effective date, and updated annually for a calendar year submittal. The NMP report(s) must be submitted to the division by February 15.

ADDENDUM TO RATIONALE

Cartwright Creek – Grasslands STP

NPDES PERMIT No. TN0027278

Permit Writer: Gary Davis

This Addendum to Rationale presents the permittee's written comments concerning the draft permit, followed by the division's responses provided in **bold italics** font. Also, written draft permit comments were provided by the Harpeth River Watershed Association (HRWA), Tennessee Clean Water Network (TCWN) and USEPA, which are likewise addressed. This "Addendum to Rationale" provides the basis for augmenting the draft permit's "Rationale" and finalizing the permit. This Addendum to Rationale includes references to the division's August 31, 2010 Public Hearing – Notice of Determination (NOD), which is presented in this document following the Rationale. The Public Hearing served for receiving comments regarding the draft permits and their renewals for Franklin STP (TN0028827), Lynwood Utility Corp. STP (TN0029718), and Cartwright Creek, LLC – Grassland STP (TN0027278).

Permittee's Comments (Summarized)

1. Additions/Changes to Effluent Limits:
 - a. Summer monthly average limits total nitrogen (1.9 mg/L) and total phosphorus (3.5 mg/L) – however, treated effluent not previously monitored, therefore monitored late September through late October 2009. Based on limited data existing WWTP has potential to achieve total phosphorus limit and most likely not meet total nitrogen limit.
 - b. Formulate and implement written nutrient management plan.
 - c. Fecal coliform monitoring eliminated and *E. coli* monitoring frequency 5x/week and includes daily maximum 941 cfu/100 ml.
 - d. Monthly average and weekly TSS amounts (lb/day) increased and concentrations unchanged.
 - e. Compliance schedule – 18 months after final permit issuance.
2. The permittee's collection/treatment system over 30 years old and needs significant repairs and/or replacement. The current user fees do not provide sufficient revenue to meet operating cost or fund major repairs. Due to its funding mechanisms subject to obtained Tennessee Regulatory Authority (TRA) approved rate changes, the permittee now can not confirm its compliance with the draft permit proposed total nitrogen limits.

Division's Response For Permittee's Above Summarized Comments

1. ***Permittee has included some of the permit's major changes.***
 - a. ***Page R-7 shows the basis for including total nitrogen and total phosphorus treated effluent concentration limits in the new permit. However, pursuant to the public hearing 10 day period for written comments, the permittee request alternative summer total nitrogen and total phosphorus concentration***

discharge values to take into account reuse (up to 0.25 mgd) of its treated wastewater via a local golf course. As such the division has included reuse provisions and included alternative total nitrogen and total phosphorus concentration discharge limits pursuant to the following calculations: Based on the Lynwood Utility Corp. STP TN0029718 new permit 3.0 mg/l limit * design flow/monthly avg. DMR flow – reuse flow = 3.0 mg/l * 0.25 MGD/(0.402 MGD – reuse MGD) which results in an Outfall 001 discharge summer average monthly total nitrogen concentration permit values shown below. Likewise, for total phosphorus using Lynwood Utility Corp. STP TN0029718 new permit 5.7 mg/l limit * design flow/(monthly avg. DMR flow – reuse flow) = 5.7 mg/l * 0.25 MGD/(0.402 MGD – reuse MGD), with summer TP permit concentration limits shown below.

Summer TN and TP Monthly Avg. Outfall 001 Discharge Concentration Limits

| | Berry's Chapel Utility STP | No Reuse | With Reuse | | |
|-------------------------|----------------------------|----------|----------------|-------------------|-------------------|
| Reuse Flow (mgd) | | | >0 to 0.10 (a) | >0.10 to 0.20 (b) | >0.20 to 0.25 (c) |
| Total Nitrogen (mg/L) | 3.0 | 1.9 | 2.1 | 3.0 | 3.0 |
| Total Phosphorus (mg/L) | 5.7 | 3.5 | 4.0 | 5.7 | 5.7 |

Note: No reuse = summer concentration included in Berry's Chapel Utility STP TN0029718 (formerly Lynwood Utility Corp. STP TN0029718) final permit.

Above reuse flow is the monthly average value.

(a) 0.05 mgd used for calculations.

(b) 0.15 mgd used for calculations.

(c) Same values as "No Reuse".

- c. As reference on p. R-8, fecal coliform monitoring has been replaced by *E. coli* testing, with 126 cfu/100 ml and 941 cfu/100 ml *E. coli* discharge limits.
 - d. Incorrect TSS treated effluent discharge loadings were included in the draft permit. The TSS mass discharge values from the permittee's current permit were included in the final permit.
 - e. An 18 month compliance schedule for achieving the treated effluent total nitrogen and total phosphorus limits is included in the final permit.
2. The division is aware of the permittee's funding arrangements and appreciates that WWTP upgrades can result in increased costs.
 3. Pursuant to the permittee's verbal comments provided during the Public Hearing and the 10 day written comments period, the permit has been finalized to authorize summer discharge of treated effluent to the local golf course according to the following division requirements.

The treated effluent discharged to the golf course shall be monitored by the permittee as specified below:

| <u>Parameter</u> | <u>Monthly Average</u> | <u>Daily Maximum</u> | <u>Measurement Frequency</u> | <u>Sampling Type</u> | <u>Location</u> |
|------------------|------------------------|----------------------|------------------------------|----------------------|-----------------|
|------------------|------------------------|----------------------|------------------------------|----------------------|-----------------|

| Flow (mgd) | Report | Report | 7/week | daily | STP effluent |
|----------------------|--------|--------|------------|-------|--------------|
| E. coli (cfu/100 ml) | 23 | 126 | 1/week (a) | grab | STP effluent |

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. Non-compliance with established E. coli limits should be reported by the permittee only when the concentration of the E. coli group in any individual sample exceeds 126 per 100 ml and when the monthly average exceeds 23 per 100 ml as a running 30 day average. The permittee must submit records of the 30 day running average with their monthly operating reports (MORs).

(a) 1/week monitoring frequency applies if a separate disinfection process dedicated to the reuse water is used. When the E. coli monitoring requirement is less than 5 samples per month, the permittee shall report minimum, arithmetic average, and maximum values.

Harpeth River Watershed Association (HRWA) Comments

HRWA's written comments are provided in Attachment AD-2. The attachments referenced in the HRWA comments are available in the division's permit file. From the HRWA comments the division developed the following brief topical summary as related to the permittee's (Lynwood Utility Corp. STP TN0029718) draft permit, with the corresponding division response.

The Harpeth River's dissolved oxygen is below the state water quality standard of 5.0 mg/L above and below the discharges from the three wastewater treatment plants during effluent dominated low-flow summer conditions, including downstream sections classified as Exceptional Tennessee Waters. An inaccurate 2004 TMDL was developed by the USEPA and used by the division to define discharge requirements for the proposed new permits. Therefore, additional load reductions are warranted for the discharges, beyond those presented in the three draft permits [Franklin STP TN0028827, Lynwood Utility Corp. STP TN0029718, and Cartwright Creek, LLC – Grassland STP TN0027278].

Division's Response For HRWA Summary

The division did incorporate the requirements included in the USEPA's 2004 TMDL in the proposed draft permits, and included key investigational/implementation requirements for better understanding the nature of the receiving stream's dissolved oxygen encumbrances and enhancement opportunities.

Franklin STP's implementation of its Integrated Water Management Plan (IWMP) should result in further consideration of the impacts from the numerous non-point sources and the direct dischargers and identify upgrading/enhancing options for improving the instream dissolved oxygen during low-flow summer conditions. As such, upgrade options can be assessed in term of the actual receiving stream's capacity. The division has suggested to the downstream dischargers (Lynwood Utility Corp. STP TN0029718 and Cartwright Creek, LLC – Grassland STP TN0027278) that they be involved as possible in Franklin STP's IWMP.

HRWA's Comments Nos. 9 Through 13 as follows are focused on the permittee's and Lynwood Utility Corp. STP (TN0029718) draft permits.

Harpeth River Watershed Association (HRWA) No. 9 Comment

9. The permits for Lynwood and Cartwright Creek need to require their participation and some funding that they bring to Franklin's IWRP process so that all the permittees are involved. The possible scenarios for an implementation plan for a TMDL on the Harpeth for low dissolved oxygen will need to involve all 3 sewer plants. The 3 sewer plant utilities, the city of Franklin and Williamson County have all had discussions already as the northern Williamson County area looks at regional sewer solutions.

Division's Response For HRWA No. 9 Comment

The division has suggested to the permittee and Lynwood Utility Corp. STP (TN0029718) that it would be good if they can be involved in Franklin STP's IWMP development/implementation. The division understands that the magnitude of the permittee's and Lynwood Utility Corp. STP discharges are significantly lower than the Franklin STP's, as well as funding resources.

Harpeth River Watershed Association (HRWA) No. 10 Comment

10. Both permits need to also require the similar receiving stream investigations that are in Franklin's proposed permit. This might be the best way to essentially have all 3 permittees involved in the IWRP and combining resources for water quality data that is needed for developing a waste load allocation/new TMDL for the Harpeth for low dissolved oxygen and nutrient enrichment.

Division's Response For HRWA No. 10 Comment

See division's response for HRWA No. 9 comment.

Harpeth River Watershed Association (HRWA) No. 13 Comment

13. Cartwright Creek has a significant I/I problem that the department recognizes in the draft permit (page R2). This significant increase in rain and groundwater into the facility is compromising the treatment according to the draft permit. The proposed permit does not have specifics as to how the utility will address this which needs to be done. This issue should be part of the IWRP so that these costs are incorporated in alternatives analysis that the project will be developing.

Division's Response For HRWA No. 13 Comment

The permittee has noted its request for additional funding from TRA, a part of which focused on I/I corrections.

Tennessee Clean Water Network (TCWN) Comments

TCWN comments are provided in Attachment AD-3, which also includes Dr. Burkholder comments. From the TCWN comments the division extracted the following brief topical summaries extracted as related to the three permits [Franklin STP TN0028827, Lynwood Utility Corp. STP TN0029718 and Cartwright Creek, LLC – Grassland STP TN0027278], with the corresponding division responses. Likewise addressed are TCWN's comments focused on permittee's (Lynwood Utility Corp. STP TN0029718) draft permit.

TCWN Summary Comment No. 1

Due to the low receiving stream natural flow, the three discharges likely cause or contribute to the segment water quality impairments. The draft permits provisions would cause a condition of pollution and do not include the most stringent limits necessary to implement ammonia-nitrogen, total nitrogen, total phosphorus and CBOD5 water quality standards.

Division's Response For TCWN Summary Comment No. 1

The division included the USEPA's 2004 TMDL provisions for the necessary controls for the permittees' CBOD5, ammonia-nitrogen, and total nitrogen. The three draft permits included total phosphorus limits also for additional nutrients control. Additional permit requirements were included, as noted above in the division's responses to the HRWA comments.

TCWN Summary Comment No. 2

TCWN suggested that the permit include "This permit does not authorize discharges that would result in violation of a state water quality standard (TDEC Rules, Chapters 1200-4-3 and 1200-4-4). Such discharges constitute a violation of this permit." Such language allows TDEC to protect water quality if the permit's numeric effluent and monitoring requirements are not sufficient.

Division's Response For TCWN Summary Comment No. 2

See division's response to TCWN Summary Comment No. 1 above. Note that the permit standard language requires as provided in Part 2.4.2, the permittee to comply with all state and federal water quality laws.

TCWN Summary Comment No. 3

TCWN's nutrient contributions comments:

- a. Total phosphorus and total nitrogen limits are high compared to levels determined to cause noxious algal blooms (per Dr. Burkholder comments also attached in Appendix AD - 3. It is feasible for each facility to meet lower limits.
- b. The draft permits developed using USEPA's 2004 TMDL total nitrogen wasteload allocations as annual average total nitrogen (lbs/day), which results in significant exceedances of loading limits.
- c. Numeric total nitrogen and total phosphorus limits need to be established for the entire year. Limiting winter loading important because a portion of the nutrient loads are stored in the streambed sediment and will contribute to summer eutrophication.
- d. None of the permits take into consideration inorganic nitrogen or bioavailable organic nitrogen, which are the most important forms of nitrogen in relation to cause of eutrophication.
- e. The total nitrogen and total phosphorus limits should be based on analysis of the assimilative capacity of the receiving waters rather than the facilities' demonstrated performance.
- f. The division should assess if the application of its 2001 *Development of Regionally-Based Interpretations of Tennessee's Narrative Nutrient Criterion* could better serve to protect the segments water quality.

More stringent numerical limits are necessary for all three STP permits. The state has the authority and responsibility to set effluent limits in compliance with water quality standards per 40 CFR 122.44(d).

Division's Response For TCWN Summary Comment No. 3

The division included the TMDL total nitrogen limits. Additionally, the three permits included total phosphorus limits. Also, advanced pragmatic/empirical measures, e.g., including upstream/downstream diurnal monitoring/reporting requirements in conjunction with other permitting requirements to identify actual effective measures for defining dissolved oxygen improvements were included in the Franklin STP's TN0028827 draft permit.

The division's responses for the above items "a" through "f" and summary comment follows:

- a. ***Many factors can result in algal blooms including the treated effluent total nitrogen and total phosphorus. Other factors include the ratio of total nitrogen/total phosphorus, solar radiation and temperature. The instream upstream/downstream diurnal variation results in dissolved oxygen and pH will provide useful information regarding the potential impacts from the dischargers and upgrade options. The Franklin***

STP's IWMP will be focused on defining upgrades for the dischargers and non-point source inputs.

b. The division's understanding is that the 2004 TMDL provided annual average mass loadings. The draft permits include elements for identifying/implementing upgrades for improving the instream dissolved oxygen. The permits will expire in 2011 at which time additional information should be available to make changes in treated effluent limitations/monitoring requirements, if warranted.

c. Annual average total nitrogen treated effluent mass loading limits provides coverage for the permits. The three permits include discharge total phosphorus limits for summer operation. During winter periods the receiving stream flows are much higher, therefore due to hydraulics, reduced streambed sediment accumulation with corresponding transport downstream are expected.

d. The 2004 TMDL presented total nitrogen allocations, which were used for developing the discharge permits. Total nitrogen discharge values automatically limits the inorganic and bioavailable organic nitrogen components. Within the context of Franklin STP's IWMP additional nitrogen species monitoring would be acceptable to the division, if such results could be effective for controlling algal growth.

e. Total nitrogen discharge limits were based on the 2004 TMDL allocations, with the wastewater treatment plant performances being used for the total phosphorus limits. The division expects the elements included in the three permits to allow more specific nutrient limits to be developed in the future.

f. The division considers the application of the 2004 TMDL requirements, with phosphorus limits and permitting elements to provide the most effective method to make water quality improvements.

The division considers the discharge limits and permitting conditions included in the three finalized permit to be appropriate for upgrading the receiving stream's water quality.

TCWN Summary Comment No. 4

The definition of "degradation" in Section 4.1 of the permits contradicts the "de minimis" definition in Tenn. R. and Regs 1200-4-3-.04(4). In the rules the cumulative impact can not exceed 10% of the assimilative capacity for *de minimis* determinations unless the Division determines there is a scientific basis demonstrating additional impacts are insignificant. The definition provided in the permits, and all other NPDES permits, can establish a *de minimis* level at 50% of assimilative capacity in direct contradiction to the rules of the Department. The permit language must be altered to "Degradation will not be considered de minimis if 10% of the receiving water assimilative capacity is already being used."

Division's Response For TCWN Summary Comment No. 4

This is the renewal of three existing permits and does not involve new or expanded discharges and the new permit addresses controls necessary to remedy the instream low dissolved oxygen under low-flow summer conditions. The permit's definition for "Degradation" was supplemented to include the TCWN's noted 10% provision as follows: "... (not measurable or less than 5 percent loss of assimilative capacity due to single discharger or less than 10 percent loss for multiple dischargers)...".

TCWN Summary Comment No. 4

There should be language in each of these permits placing a moratorium on any new connections while the receiving waters are still impaired for low dissolved oxygen and nutrients. The river is already beyond its assimilative capacity and increasing the potential for further contribution to these impairments is only going to further degrade the water quality of Harpeth River.

Division's Response For TCWN Summary Comment No. 5

If the receiving stream's low dissolved oxygen were solely due these three point source dischargers, then the division would likely include additional control options, potentially including moratoriums. However, it is well known that non-point receiving stream inputs are having an adverse impact on the dissolved oxygen levels associate low flow summer conditions. The permit includes a broad array of controls for remedying the receiving stream's low dissolved oxygen during summer conditions. The division cannot regulate most of the non-point sources.

USEPA Comments

The following USEPA comment was summarized from the USEPA's 12/10/2009 email for the Cartwright Creek, LLC - Grasslands STP TN0027278 proposed permit:

No rationale was presented in the draft permit for the nutrient limits compliance schedule. The permittee should have been aware of EPA's 2004 TMDL and relevant requirements. Therefore, a compliance schedule should not be provided for plant upgrades or other means (e.g., connection to Franklin STP, etc.).

Division's Response For USEPA's Comment

The draft permit Rationale (p. R-5) includes the statement, "Since the permittee does not have actual Outfall 001 discharge performance data, the division expects a transitional period of 18 months will be required for the permittee to achieve the TMDL total nitrogen mass loading limit." For clarification, "mass loading limit" should be restated as "mass loading and concentration limits". The division requires the permittee to achieve its current permit requirements, and does not necessarily have to be familiar with the TMDL provisions and how such requirements will be translated into their new permit.

Addendum to Rationale Attachments:

Attachment AD – 1, Permittee's Comments

Attachment AD – 2, Harpeth River Watershed Association (HRWA) Comments

Attachment AD – 3, Tennessee Clean Water Network (TCWN) Comments

Attachment AD – 1, Permittee's Comments



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December 7, 2009

Mr. Vojin Janjic
Manager Permit Section
Division of Water Pollution Control
Tennessee Department of Environment and Conservation
401 Church Street
L&C Annex, 6th Floor
Nashville, TN 37243

Subject: Draft of NPDES Permit No. TN0027278
Cartwright Creek, LLC Grasslands STP

Dear Mr. Janjic,

We have reviewed the above referenced draft permit for Cartwright Creek, LLC and have the following comments.

Additions/Changes to Effluent Limits: The most significant changes from Cartwright Creek's existing NPDES permit contained in the draft NPDES permit are additional effluent limitations for summer total Nitrogen (1.9 mg/L monthly average) and summer total Phosphorus (3.5 mg/L monthly average). The proposed permit also requires Cartwright Creek to formulate and implement a written nutrient management plan that describes the steps the company will take to comply.

In addition, but of lesser concern, are a number of other changes in effluent limits and sampling. Fecal coliform monitoring has been eliminated and E.coli monitoring frequency increased to 5x weekly along with a new daily maximum limit of 941 cfu/100 ml. The monthly average and weekly average suspended solids amounts have also been increased, but the concentrations remain the same.

The schedule for compliance is 18 months after the issuance of the final permit.

Existing System and proposed Additions/Changes: The existing treatment system consistently meets the effluent quality requirements in its existing NPDES permit. The proposed effluent limits of most concern are the new Total N and Total P limits. Since Cartwright Creek has not previously sampled for these parameters, the Company conducted a sampling program from late September through late October 2009 (see attached report). While the sampling program allowed only a "snapshot" view of treatment system performance, it shows that at the present time, the existing system has

the potential to meet the Total Phosphorus limit. It also shows that the treatment system will most likely not meet the Total Nitrogen limit.

Company's approach: The treatment and collection systems for Cartwright Creek Grasslands are over 30 years old and in need of significant repairs and/or replacement. The current user fees do not provide sufficient revenue to meet operating costs or fund major repairs. However, the Company has developed a plan to begin to address these issues.

In April 2009, the Company submitted a "Petition to Change Rates and Charges" (Petition) to the Tennessee Regulatory Authority (TRA). Please refer to the TRA website, Docket No. 09-00056.

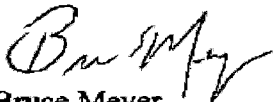
As detailed in the Docket, the Petition includes increases in monthly user charges that would cover shortfalls in operating costs. It also includes an increase in new customer tap fees that would be placed in a separate account and be used to address the significant inflow and infiltration (I&I) in the collection system. Reduction in I&I will be required whatever solution is identified to meet the proposed effluent limits. However, the proposed tap fees will likely not be sufficient to fund major modifications and/or replacement of the treatment system should they be required to meet the draft permit's nutrient limits.

The Petition includes using a portion of the new tap fees to complete field work and engineering that will identify the most cost effective repair approaches to the I&I and other system repairs. In anticipation of the draft NPDES permit, this engineering includes development of scope and costs for treatment system upgrades required to comply with the proposed treatment limits.

Cartwright Creek anticipates that the TRA will act on its Petition in December 2009. Provided the user and tap fees are approved as currently proposed in the Petition, Cartwright Creek will make additional taps available. When sufficient tap fees are contracted for and collected, the engineering work will commence. Once the engineering work defines the upgrades required to meet the new effluent limits, the next step will be to seek and obtain funding for the upgrades. Given this sequence, at the present time Cartwright Creek is unable to confirm whether or not it will meet the proposed Total Nitrogen limits within 18 months of the final permit.

At your convenience, Cartwright Creek would welcome a meeting with TDEC staff to discuss any questions or comments.

Thank you,



Bruce Meyer
Sheaffer International, LLC
Manager of Cartwright Creek, LLC

**CARTWRIGHT CREEK LLC,
GRASLANDS WASTEWATER TREATMENT AND
COLLECTION SYSTEM
WILLIAMSON COUNTY, TENNESSEE**

REPORT

**DRAFT NPDES PERMIT TN0027278:
Analysis of New Effluent Limits**

Prepared for:
Cartwright Creek LLC
1551 Thompson Station West
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December 5, 2009



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Report available in division's permit file.

Attachment AD – 2, Harpeth River Watershed Association (HRWA) Comments



**HARPETH RIVER
WATERSHED ASSOCIATION**

December 1, 2009

Mr. Gary Davis
Tennessee Department of Environment and Conservation
Division of Water Pollution Control
6th Floor, L&C Annex
401 Church Street
Nashville, Tennessee 37243

REC'D
DEC 02 09
Permit Sec

Re: Draft NPDES permits:
Franklin STP, TN0028827; Lynwood Utilities STP, TN0029718;
Cartwright Creek LLC – Grassland STP, TN0027278

Dear Mr. Davis,

Thank you for accommodating our request in October to extend the comment period until December 1 to enable us to compile our materials and analyses to provide to the department on these proposed permits. Please incorporate all of the attachments provided with this summary into our comments for the record. Also, HRWA signs onto the comments provided by the Tennessee Clean Water Network as they have signed onto ours in order to provide the department with comprehensive input without duplicating effort. TCWN has included review of the three permits by Dr. Joann Burkholder, an aquatic ecologist, who is the director of the Center for Applied Aquatic Ecology at NC State University. HRWA has included an analysis and calculations of the pollution load the river can handle based on the TMDL principles and current field conditions from Mike Corn, President of Aquaeter, an environmental engineering firm with extensive experience in TMDLs and water quality.

In addition to these comments I would like to reiterate our request for a joint public hearing on the three proposed permits. Having worked with the department on prior permit renewals (Lynwood and Franklin) and the ARAP permit for a withdrawal regime for Franklin's drinking water plant, I would like to suggest that the joint public hearing be set in January after the public hearings on the triennial review of the water quality standards. In consideration of the holiday season as well, setting a public hearing for late January will enable more public attendance to learn and provide input.

These three sewage treatment plants (STP) discharge directly into the Harpeth River within a 17 mile stretch of one another in the upper third of the watershed. The receiving waters are impaired as a result of low dissolved oxygen levels, nutrients and

phosphates according to TDEC's 2008 303(d) list. Franklin's STP, with a design flow of 12 MGD (million gallons a day), is the largest point source discharger in the entire 872 square mile watershed, and is classified as a major discharger. At this time, the facility is operating at about half that capacity. The other two STPs, though significantly smaller as minor dischargers, are not far downstream. The EPA completed a TMDL for Nutrient Enrichment/Low Dissolved Oxygen in 2004 that applied to the Harpeth from the headwaters down to the mainstem's confluence with the Little Harpeth at the Williamson County line.

Violations of the state's dissolved oxygen standard in the Harpeth occur during the summer when the river naturally has its low flow summer season. Data gathered by the EPA, TDEC, HRWA, and consultants in studies related to various permit issues on the Harpeth have documented low dissolved oxygen levels as far downstream as the Harpeth River State Park in Cheatham County. The Harpeth River is listed on the 303(d) for low dissolved oxygen all the way downstream to the confluence with the South Harpeth in Cheatham County. These violations are occurring in two Tier II sections of the Harpeth River: the state scenic river section in Davidson County, and the adjacent downstream section in Cheatham County adjacent to the number properties that comprise the Harpeth River State Park. The attachments include four different dissolved oxygen studies of the Harpeth River that HRWA has conducted since 2002 with various partners and supporters. The two most extensive in 2006 and 2007 were coordinated with TDEC field staff with the study in 2007 funded in part by the TN Wildlife Resources Agency.

A number of analyses have been done that have built on and relooked at key aspects of the EPA's TMDL (Attachments 6 and 7). In addition to the mainstem's dissolved oxygen studies, HRWA has funded analyses, completed an EPA grant with Franklin and Williamson County as partners, and received several state 319 stream restoration grant that have encompassed the following: watershed plans and stream restoration in the headwaters, bacterial surveys and efforts toward addressing failing septic in the headwaters, effluent domination of the river's flow in the summer downstream from Franklin, industrial chemical oxygen demand just upstream from Franklin's discharge by contaminated groundwater from Egyptian Lacquer, effect on the river's assimilative capacity from water withdrawals, and the use of site level stormwater runoff tools to reduce stormwater runoff contributions from development.

A key finding from several years of summer dissolved oxygen monitoring is that the Harpeth River does not meet the state water quality D.O. standard upstream from the first permitted sewage treatment plant. Data gathered measured times when the river was below state standards upstream of each of these permitted discharge points. Based on analysis funded by HRWA, at times when the river's dissolved oxygen levels were significantly below standards, the river's flow below Franklin was 50% or more of treated effluent that was then added to by the two downstream STP dischargers. Dissolved oxygen levels slowly increased and were above or close to the state standard in the Harpeth over 30 miles downstream from the Cartwright Creek outfall in Cheatham County where the river's flow was ten times or more what it is through the Franklin and

northern Williamson County area. (See attachment 8 for a short summary or the actual reports in attachments 2-7).

Thus, the Harpeth River in the summer season is violating water quality standards for dissolved oxygen when the city of Franklin's plant is discharging at less than half of its permitted design capacity with a very highly treated effluent that is well within the permit limits. From a review of Franklin's DMRs, the plant's effluent is consistently at a BOD₅ of 2 mg/l or less. The proposed permit limit for BOD₅ in the renewal is 4 mg/l which is based on the TMDL. At Franklin's design flow of 12 MGD, this is significantly MORE pounds of oxygen demand than the city currently discharges and the river does not currently meet the state water quality standards under these current conditions. This is the same for the other two permits. These field data findings essentially point to issues with key assumptions in the TMDL, and that it is time for investment in a new TMDL model. (Attachment 6-7).

Field data and analysis provided with these and TCWN's comments all indicate that the Harpeth River is not meeting water quality standards, especially dissolved oxygen, because of effluent discharges from these facilities. The Harpeth river's flow in the summer is so low that permitted effluent discharges can easily make up a significant percent of the river's flow (specific estimates provided in attachments 6-7). To quote Dr. Burkholder in her comments, the Franklin STP with a design flow of 12 MGD "can 'swamp' the natural flow of the stream (low flow 7Q10 is only 0.49 MGD)." Though Franklin's design flow is the largest, because of the river's summer low-flow conditions, both the much smaller Lynwood and Cartwright Creek sewer plants also contribute enough pollutant load to continue to reduce oxygen levels and add nutrients that feed algal growth in the river. Lynwood at 0.4 MGD contributes about 14% of the river's flow when the Harpeth is at low flow, 7Q10 conditions of 2.77 MGD. Cartwright Creek, though the smallest at 0.25 MGD, has such significant inflow/infiltration problems with its collection system, that its effluent flow is nearly double that. So, even this small sewer plant when compared to the large upstream Franklin facility still contributes around 10% to the river's flow during 7Q10, low-flow conditions (2.86 MGD in the river).

As Dr. Burkholder states for the Lynwood and Cartwright Creek permits, "discharge from the STP under its new permit will continue to contribute substantially to the nutrient/eutrophication-related impairment for the receiving segment of this 303(d) listed stream." She states the same thing for Franklin's permit: "discharge will continue to significantly influence" the Harpeth.

The analysis provided in the attachment to our comments from Aquaeter (attachment 1) come to the same conclusion based on TMDL pollutant load calculations for oxygen demand. Using the TMDL equation that requires a margin of safety, incorporating pollutant loading from nonpoint sources, and using the specific data derived from the EPA in its TMDL, the amount of pollutant load the Harpeth can assimilate at the point of Franklin's outfall is 130 lbs/day of BOD (biological oxygen demand.) EPA's TMDL in comparison is four times higher at 427 lbs/day. Aquaeter's

work is based on existing conditions in the Harpeth, whereas the EPA's TMDL made a significant assumption that the river in the summer would be above state standard of 5 mg/l. (The TMDL used 6 mg/l). With existing conditions, that include a 300 lb/day pollutant load from the Egyptian Lacquer chemical input from contaminated groundwater, 130 lbs/day is all there is in the Harpeth for the existing three sewer plants. This is significantly less than the proposed permits would allow.

Based on the field data and analyses summarized above, the draft permits appear to violate the Clean Water Act and the TN Water Quality Control Act by not setting permit limits so that water quality standards are met in the receiving stream--the Harpeth (see citations in TCWN comments). In addition, permits can not be authorized when "conditions of the permit do not provide for compliance with the applicable requirements of the CWA or regulations promulgated under CWA" (40 CFR Part D section 122.4 (a) and (d) and TWQCA 1200-4-5-.04(f)).

HRWA applauds the department in working on a watershed basis in these permit renewals. For the Harpeth river, this is the first time the 3 sewage treatment plants in Williamson County will have their permits synchronized for renewal. This enables TDEC for the first time to have all the permit holders, sister agencies, private sector experts, non-profit organizations, and the public focusing on establishing a solution and/or a process for finding a solution that the permits can drive that will result in the Harpeth meeting the state dissolved oxygen water quality standard in the near future.

A key to this will be Franklin's work on its new Integrated Water Resources Plan (IWRP) which will be integrating stormwater runoff, effluent discharge, effluent reuse, and water withdrawal for drinking water. The city of Franklin has also set goals in its sustainability plan for a reduction in the flow of treated effluent into the Harpeth during the summer low flow season. Williamson County has taken a lead role in addressing failing septic systems in neighborhoods around Lynwood STP. Both this sewer plant and Franklin will be receiving the sewage from over 400 currently septic served homes that will reduce the nutrient enrichment into Lynwood Creek that is also listed on the 303(d) list.

Comments Applicable to all three proposed permits:

1. Based on current conditions in the Harpeth, less effluent discharge in volume and in concentration of pollutants needs to be instituted for the low-flow summer season what is in the proposed permits. A waste load allocation and TMDL needs to be redone for the Harpeth. This can be put in motion as part of Franklin's insightful IWRP initiative. Also, Franklin should not shoulder all the work and cost for developing a WLA for the Harpeth all by itself both in terms of analysis and monitoring. Though, clearly Franklin will take the lead and will likely become the regional sewer system since it has a highly functioning STP that can meet tight effluent limits cost effectively and has already put integrated water management schemes into play, such as effluent reuse.

2. Aquaeter's comments offer an interim WLA for which to finalize the proposed permits for their short term period to the end of November 2011 that would apply for the summer, low-flow season. Establishing a waste load for the Harpeth in the vicinity of the discharges forms the foundation of a watershed based permit. Franklin can currently meet a 130 lbs/day load allocation in the summer since its effluent CBOD5 is very clean at just under 2 mg/l. At a 6 MGD flow, which is what the facility currently produces, and its current BOD5, the Franklin STP could meet this pollutant load. But, it would mean no discharge in the summer for Lynwood and Cartwright Creek (which wasn't even factored into the EPA TMDL.) Franklin in the summer season has been sending 3 -4 MGD of its effluent to irrigation reuse which does not get discharged into the Harpeth. With Franklin's effluent reuse that is already in place, there is some pollutant load that can be allocated to the two other sewer plants in the summer for the short term duration of these permits.
3. Along the same lines of moving to watershed based permitting, all 3 proposed permits need the same effluent concentrations. For example, the proposed permits right now have Franklin with a tighter BOD5 than the other two, and Lynwood with the tightest TN. All 3 have different proposed TP effluent limits too.
4. The Harpeth River segments that all 3 STPs discharge into does not meet water quality standards in the summer predominantly because of effluent discharge. Each permit at the beginning of the rationale section instead says the "division considers these conditions to be due primarily to non-point discharges rather than the permittee's treated wastewater discharge." The field data and analyses presented in these comments and the EPA's TMDL refutes this. The rationale statement needs to be edited.
5. Each permit needs language that is similar to what is found in other TDEC permits, such as the construction general permit: "This permit does not authorize discharges that would result in violation of a state water quality standard."
6. Each proposed permit dropped the TMDL reopener clause. Is there other language that accomplishes the same intent? If not, we suggest it be put back in these permits.
7. TDEC should test each facility's effluent quarterly as an independent duplicate sample when the permittee does it. The permittee can pay for this cost. This test would be used to derive the CBODu/BOD5 ratio.
8. The permits should establish a goal or two for the Integrated Water Management Plan that Franklin has just begun so that the effort which is intended to improve water quality in the Harpeth produces analysis relevant for all 3 permittees. One goal would be to establish a waster load allocation for the Harpeth. Another goal needs to be to require that Lynwood and Cartwright Creek participate and bring some funding to the effort. (See item #9 and #10 below).

Lynwood and Cartwright Creek permits:

9. The permits for Lynwood and Cartwright Creek need to require their participation and some funding that they bring to Franklin's IWRP process so that all the permittees are involved. The possible scenarios for an implementation plan for a TMDL on the Harpeth for low dissolved oxygen will need to involve all 3 sewer plants. The 3 sewer plant utilities, the city of Franklin and Williamson County have all had discussions already as the northern Williamson County area looks at regional sewer solutions.
10. Both permits need to also require the similar receiving stream investigations that are in Franklin's proposed permit. This might be the best way to essentially have all 3 permittees involved in the IWRP and combining resources for water quality data that is needed for developing a waste load allocation/new TMDL for the Harpeth for low dissolved oxygen and nutrient enrichment.
11. Lynwood's reserve sewer capacity was a significant step by TDEC when the facility was approved for expansion to address adjacent neighborhoods with failing septic systems. Williamson County leadership have spent considerable effort to now have the sewer hook systems underway. Some of the neighborhoods will actually now be served by Franklin. This is a major step toward regional sewer integration in this area. But, it is critical to keep this reserve capacity in place. Prior analysis provided by HRWA to the department two years ago when the utility wanted to accept almost 430 new homes found that it would be hard for Lynwood to meet its current permit limits as it comes closer to its design capacity as these septic homes are hooked up. We recommend keeping the reserve in place, regardless of the status of the septic hook-up program, since at Lynwood's current operation the river is not meeting standards in the summer.
12. The neighborhood in which Lynwood sits has complained again about odor. What can the department do with regard to the proposed permit to address this problem? The Cottonwood development layout that this facility was originally built for did not provide any buffering space for the facility.
13. Cartwright Creek has a significant I/I problem that the department recognizes in the draft permit (page R2). This significant increase in rain and groundwater into the facility is compromising the treatment according to the draft permit. The proposed permit does not have specifics as to how the utility will address this which needs to be done. This issue should be part of the IWRP so that these costs are incorporated in alternatives analysis that the project will be developing.

This permit renewal is really the beginning of developing a comprehensive plan for the mainstem of the Harpeth River so that it meets water quality standards during the summer low flow season. HRWA has been playing a significant role in collaborating with various state and federal agencies, working with the sewage treatment plant permittees, and bringing in private outside TMDL experts to help contribute to creating the

framework for a cost effective plan for sewage management for the large growth area of the Harpeth River watershed so that the Harpeth will meet water quality standards as soon as possible. HRWA will be part of the stakeholder group of the IWRP that has its first meeting December 17.

HRWA would like to convene a gathering of all the permit holders, their consultants, other agency experts, TDEC, and any other interested parties to host a presentation and discussion of all the dissolved oxygen data. HRWA will offer this as part of the something we can bring to the IWRP effort. Please do not hesitate to contact me with any questions on these comments and I look forward to working with all the stakeholders.

Sincerely,



Dorie Bolze
Executive Director
(615) 790-9767 ext. 101
(615) 479-0181 (c)

Cc: Paul Sloan, Deputy Director, TDEC
Paul Davis, Director, Water Pollution Control, TDEC
Vojin Janjic, Permit Section, Water Pollution Control, TDEC
Saya Qualls, TDEC
Mark Hilty, City of Franklin director of Water and Sewer
Tyler Ring, president, Lynwood Utility District
Bruce Myers, regional manager, Cartwright Creek LLC
Dave McKinney and staff, TWRA
Steve Alexander, US Fish and Wildlife Service, Cookeville
Rogers Anderson, Williamson County mayor
John Schroer, city of Franklin mayor
Bill Melville, EPA
Tom McGill, EPA
Mark Nuhfer, EPA

Attachments:

Below is a list of the attachments and a brief description of their relevance. Some are on the HRWA web site (under Library/Scientific Studies), so their location is supplied so they can be printed out for the file. Most of these documents you and others in the department have received already. I will mail you a printed set as well. Please contact HRWA for copies of any of these attachments.

1. Comments on the Harpeth River Watershed NDPES Permits, by Aquaeter to Harpeth River Watershed Association, Nov. 25, 2009

This memo includes calculations of the waste load allocation based on current river conditions that can be established now to apply for all 3 permits for summer low-flow season discharges until a TMDL is redone.

2. Dissolved Oxygen in the Harpeth River: August-September 2006. Final.
Harpeth River Watershed Association. Bolze, Cain, and McFadden. Feb. 2007.

<http://www.harpethriver.org/library/library?id=55414>

This report compiled Dissolved Oxygen data from various sources since the EPA's data for the TMDL in 2001 up to 2006. TDEC's diurnal monitoring data from 2002 and 2003 is in Appendix E. HRWA's first Dissolved Oxygen study from 2002 is Appendix F. The 2006 D.O. monitoring coordinated by HRWA and TDEC was comprised of 10 sampling sites, 3 of which were TDEC sites. Maps in the report help to locate all the sites along almost the entire mainstem from the headwaters to the take out point at the Harpeth River State Park. USGS data on flow during the monitoring is included as well.

3. Dissolved Oxygen Study: June – July 2007. Final. Harpeth River Watershed Association. By Cain and Bolze.

<http://www.sitemason.com/files/bMJfB6/HRWA%20July%2007%20dissolved%20oxygen%20study%20final%20report.pdf>

Eight sites were monitored in the segment of the Harpeth River through downtown Franklin to see if affects of dissolved oxygen could be captured from the chemically contaminated seeps into the Harpeth River and from seeps into Liberty Creek that flows into the Harpeth. The contaminated groundwater is from chemicals released by Egyptian Lacquer Manufacturing Company. The upmost site is above the lowhead dam , and the furthest downstream site is downstream of the Franklin STP outfall.

4. Dissolved Oxygen in the Harpeth River: September 2007. Harpeth River Watershed Association. By Cain and Bolze. (electronic file)

The report is complete but without a discussion section because the most recent version was corrupted. The file is a scan of a printed version. Figure 1 that displays all the site data is missing one site (#10 at RM 84.8), but the data from that site are in the report. Just like with the 2006 survey, TDEC placed diurnal monitoring probes at 3 of the sites. This year's survey was the most extensive in distance and in number of sites.

5. Harpeth River Dissolved Oxygen Survey: September 2008. Draft.
(electronic file).

This file has all the data from this year's survey in an excel spreadsheet with a summary table. TDEC wasn't able to employ the monitoring probes this year since they were in use in another watershed for the state's five-year cycle. The sites this year begin at the site below the Franklin STP outfall and the furthest downstream is at the Highway 70 bridge in Cheatham County.

6. Water Quality Analysis: Harpeth River Between Franklin and Kingston Springs, TN. Aquaeter. By Corn and Corn. For Harpeth River Watershed Association. September 2006.

<http://www.sitemason.com/files/faR5Vm/Water%20Quality%20Analysis.pdf>

This analysis discusses key assumptions in the EPA's TMDL for low dissolved oxygen, has estimated percentages of river flows that are treated effluent, and has TDEC's diurnal D.O. data from 2002 and 2003. Key assumptions in the TMDL include that the river will be at 6 mg/l of D.O. before the first STP outfall.

7. Dissolved Oxygen in the Harpeth River: Connecting Point Source, Nonpoint Source, and Water Withdrawals. Presentation to the TN AWRA by Aquaeter and HRWA. By Corn, Corn, Bolze, and Davee. April 2008. Powerpoint. (electronic file)

The powerpoint has EPA's Dissolved Oxygen data chart from the TMDL from August 2000 (p. 12), river flow data from the 2006 HRWA Dissolved Oxygen survey, three charts from TDEC's diurnal monitoring from 2002 and 2003 with estimated ranges of effluent percentage (pgs 14-16), and a simple mass balance for the Harpeth river to derive the flow needed to assimilate the design capacity of the Franklin sewer plant. If the Harpeth river just upstream of the Franklin outfall is 6 mg/l, then 96 cfs of flow is needed to provide enough oxygen to assimilate the effluent at the design flow of 12 MGD and current effluent concentrations. On page 23 is Figure 18 from the EPA TMDL that indicates that the BOD concentration in Franklin's effluent needs to be 3 mg/l for a 12 MGD design flow to meet the river's D.O. standard of 5 mg/l. This is lower than the 4 mg/l recommended in the TMDL summary table.

8. Two Memos via email by Dorene Bolze, Harpeth River Watershed Association, to EPA, USFWS, TWRA, USGS, Aquaeter, and others, on findings from Dissolved Oxygen surveys. March 08, 2007 re 2006 Dissolved Oxygen study and July 19, 2007 re June 2007 Dissolved Oxygen study in Franklin area. (electronic file)

The memos provide a summary of results that found low dissolved oxygen levels in violation of state water quality standards upstream and downstream of the various sewage treatment plant outfalls. Memos point to analysis of percent of river flow that is treated effluent during the monitoring period. Also discussed are assumptions in the EPA's TMDL for low dissolved oxygen and D.O. drop tied to the seeps of chemicals in the groundwater from Egyptian Lacquer.

Attachment AD – 2, Tennessee Clean Water Network (TCWN) Comments

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November 30, 2009

Mr. Gary Davis
Tennessee Department of Environment & Conservation
Water Pollution Control
6th Floor L & C Annex
401 Church Street
Nashville, TN 37243-1534

Subject: Draft NPDES Permits TN0028827 (Franklin STP), TN0027278 (Cartwright Creek, LLC - Grassland STP) and TN0029718 (Lynwood Utility Corp. STP)

Dear Mr. Davis,

The Tennessee Clean Water Network (TCWN) submits these comments in response to the public notice regarding the draft NPDES permits for three sewage treatment plants (STP) in the Harpeth River Watershed: TN0028827 (Franklin STP), TN0027278 (Cartwright Creek, LLC - Grassland STP) and TN0029718 (Lynwood Utility Corp. STP). Below is a general summary of our comments. Please incorporate all attachments written by Dr. JoAnn Burkholder (Professor, Applied Aquatic Ecology at North Carolina State University) as part of these comments. TCWN also signs on to the comments submitted by the Harpeth River Watershed Association and recognizes through their comments, the Harpeth River Watershed Association signs onto these comments submitted by TCWN.

We appreciate the extension of this public comment period in order to thoroughly review these draft permits. We also appreciate the opportunity to comment on this permit and look forward to hearing from the Division.

Comments applicable to all three permits

1. Stream flow, effluent flow and contribution to impairments.

These three STPs discharge directly into the Harpeth River within a 17 mile stretch of one another. The receiving waters are impaired as a result of low dissolved oxygen levels and nutrients. According to Tennessee's Section 303(d) List of Impaired Waters, the receiving segment of the Lynwood Utilities STP and the Cartwright Creek LLC-Grassland STP discharges (HUC 05130204-009_3000) is impaired by nutrients and low dissolved oxygen, while the receiving segment of the Franklin STP (HUC 05130204-016_1000) is impaired as a result of low dissolved oxygen and phosphate.

The effluent from these plants constitutes a significant percentage of the total flow of this stretch of the Harpeth River. The 7Q10 for the segment in which the Franklin STP discharges is 0.49 MGD. The Franklin facility has a design capacity of 12 MGD. It is more than apparent the Franklin STP effluent will not only take over the natural flow of the river, but will also constitute a considerable portion of the stream flow into which Cartwright Creek and Lynwood STPs are discharging.

With such a low natural stream flow it is likely the major discharge of pollutants of concern from the three STPs will cause or contribute to the existing impairments of the stream segment. The statements provided by Dr. JoAnn Burkholder, the more detailed discussion below, and the comments/attachments submitted by the Harpeth River Watershed Association, support this conclusion.

Accordingly, The draft permits appear to violate Sections 402 and 302 of the federal Clean Water Act, 33 U.S.C. §§ 1342(b)(1)(A) and 1312(a), and Tenn. R. and Regs 1200-4-5-.04(f) by failing to impose effluent limits that are sufficiently stringent to attain and maintain applicable water quality criteria for ammonia as nitrogen, Total Nitrogen, Total Phosphorus, and CBOD₅. See also 40 C.F.R. §§ 122.44(d)(1)(vii)(A) and 123.25.

Issuance of the draft permit as proposed would also appear to violate Tenn. Code Ann. § 69-3-108(e) because it (1) would approve an activity that would cause a condition of pollution, and (2) fails to include the most stringent effluent limits necessary to implement applicable water quality standards for ammonia as nitrogen, Total Nitrogen, Total Phosphorus, and CBOD₅ in the Harpeth River.

2. Narrative protection from water quality criteria violations.

In order to adhere to water quality standards and protect the water quality of the receiving waters, each permit should include the following language, which is similar to that included in other TDEC permits:

This permit does not authorize discharges that would result in violation of a state water quality standard (TDEC Rules, Chapters 1200-4-3 and 1200-4-4). Such discharges constitute a violation of this permit.

This language preserves TDEC's authority to protect water quality in the event the permit's numeric effluent limits and monitoring requirements prove not to be sufficient for that purpose. Given that very similar language is included in TDEC's construction general permit, which applies to hundreds of point-source dischargers around the state, it would be reasonable to include these provisions in all NPDES permits issued in Tennessee.

3. Nutrient contributions.

- a. The total phosphorus (TP) and total nitrogen (TN) limits are high compared to what has been determined to cause noxious algal blooms (see comments by Dr. Burkholder, attached). It is feasible for each facility to meet lower limits.

- b. In compliance with the 2004 Harpeth River Organic Enrichment/Low Dissolved Oxygen TMDL, daily maximum loading limits must be included. This TMDL provides a wasteload allocation (WLA) for each STP (page 55). The WLA for TN is provided as "annual total nitrogen lbs/day." However, the permits take the lbs/day WLAs from the TMDL and use them as averages. Stating these WLAs as averages in the permits provides for significant exceedances of this loading limit.
- c. Numeric TP and TN limits need to be established for the entire year. Limiting loading in the winter is important because a portion of the nutrient loads are stored in the streambed sediment and will contribute to summer eutrophication.
- d. None of the permits take into consideration inorganic nitrogen or bioavailable organic nitrogen, which are the most important forms of nitrogen in relation to causes of eutrophication.
- e. The TN and TP limits should be based on analysis of the assimilative capacity of the receiving waters rather than the facilities' demonstrated performance.
- f. The Division should assess if the application of its 2001 *Development of Regionally-Based Interpretations of Tennessee's Narrative Nutrient Criterion* could better serve to protect the water quality of the receiving segments.

More stringent numeric nutrient limits are necessary for all three of these STP permits. In accordance with 40 CFR § 122.44(d) the state has the authority and responsibility to set effluent limits in compliance with water quality standards.

4. Definition of degradation.

The definition of "degradation" in Section 4.1 of the permits contradicts the "de minimis" definition in Tenn. R. and Regs 1200-4-3-.04(4). In the rules the cumulative impact can not exceed 10% of the assimilative capacity for *de minimis* determinations unless the Division determines there is a scientific basis demonstrating additional impacts are insignificant. The definition provided in the permits, and all other NPDES permits, can establish a *de minimis* level at 50% of assimilative capacity in direct contradiction to the rules of the Department. The permit language must be altered to "Degradation will not be considered de minimis if 10% of the receiving water assimilative capacity is already being used."

5. Moratorium on connections

There should be language in each of these permits placing a moratorium on any new connections while the receiving waters are still impaired for low dissolved oxygen and nutrients. The river is already beyond its assimilative capacity and increasing the potential for further contribution to these impairments is only going to further degrade the water quality of Harpeth River.

Comments specific to the Franklin STP (TN0028827)

- 1. Section 1.1: The reduction in suspended solids to 10 mg/l in the summer also needs to be applied to winter months to address concern about suspended solids impacting pools in the receiving waters.

2. Section 3.2 d. ii: The second table contains pre-treatment pollutants required to be analyzed once during the term of the permit. These pollutants should be analyzed and reported at least once a year.
3. Section 3.4: The chronic biomonitoring for effluent toxicity will yield helpful information, but it is required too infrequently, except when there is a test failure. No requirements were specified for monitoring toxic chemical environmental contaminants in the effluent, which have become of increasing concern for human health.
4. Section 3.9: Does this language exempt the permit holder from having to obtain a State Operating Permit for the reuse of treated wastewater? It may not be necessary to require reuse water to receive the same treatment as that water being discharged as effluent in the Harpeth River. These will lead to additional chemicals unnecessarily being applied to land. The language must require for the protection of human and animal health, as well as the prevention of pollutant loadings to our waters, but does not need to create additional chemical waste on the land and in the groundwater.
5. Attachment 1 (page 35): Chemical monitoring of receiving stream water quality is to be required at three locations (1 upstream, 2 downstream), but only one sample is to be collected mid-depth, mid-channel. Replicates are necessary. Also, the early morning schedule will not detect high pH from algal blooms that may develop downstream in response to nutrient over-enrichment (e.g. phosphorus) from the STP. Monitoring should be required mid-day rather than early morning.
6. Section R7.5: The permit should more clearly explain any relationship of this facility and that of Jones Creek STP and what considerations from the Jones Creek STP NMP were applied in this permit.

Comments specific to Cartwright Creek, LLC – Grasslands STP (TN0027278)

1. Section R6: The permit compliance problems, extensive I/I issues, mechanical breakdowns, and sampling/analytical technique shortcomings require much further analysis. Taking these problems into consideration, how much of the data in this permit or that on which effluent limits are based is accurate?
2. Section R6: Since the I/I problem has not been resolved, it is expected treatment of BOD and other pollutants will continue to be compromised.
3. Section R7.5: This STP is contributing to the impairments of the receiving waters. The stream has an “unusual series of pools” (page R-7), making it more vulnerable to impacts from the high concentrations of N and P allowed in this permit during the critical summer period. This STP, with design capacity 0.25 MGD, but with a 0.402 MGD average monthly flow from excessive I/I problems, can contribute approximately 10% or more of the flow in the Harpeth River at low-flow conditions (7Q10 of 2.86 MGD). Considering these facts collectively, it is anticipated the discharge from this STP under its new permit for secondary sewage treatment will continue to contribute substantially to the nutrient-related impairments of the receiving segment.

Comments specific to Lynwood Utility Corp. STP (TN0029718)

1. Section 1.1: According to Appendix 2 (page R-12), the current permit limits include a winter daily maximum concentration of 20 mg/l and a 40% daily minimum percent

removal for CBOD₅. These are absent in Section 1.1. The removal of these limits appears to violate anti-backsliding rules in accordance with the Clean Water Act Section 402(o).

2. Although this STP has an advanced treatment system consisting of extended aeration, two-stage activated sludge treatment for biological nitrification/denitrification and has had minimal operational problems during the present permit term, it could potentially contribute up to 14% of the flow in the Harpeth River at low-flow conditions (7Q10 of 2.77 MGD). Also the series of pools in this river make it more vulnerable to impacts from the still relatively high concentrations of nitrogen and phosphorus discharged through this permit. Even if this STP complies with the proposed numeric effluent limits, its discharge will continue to contribute substantially to the nutrient-related impairments of the receiving waters.

Comments applicable to Cartwright Creek, LLC - Grasslands STP (TN0027278) and Lynwood Utility Corp. STP (TN0029718)

The 2004 Harpeth River Organic Enrichment/Low Dissolved Oxygen TMDL noted to consistently achieve an in-stream DO concentration at or above the required minimum of 5.0 mg/L, substantial reductions would be required in the receiving stream's sediment oxygen demand (SOD), in conjunction with an average annual TN mass loading of no more than 15 lbs/day from Cartwright Creek STP's outfall 001 (page R-5) and no more than 22 lbs/day from Lynwood STP's outfall 001 (page R-4). The draft permits note the TMDL described this stream segment as nitrogen-limited, but supplies of both TN and TP are high in these discharges, so it is likely Harpeth River sustains over-enrichment of both nutrients. The draft writing also asserts "the additional TN reduction requirements along with decreases in the SOD should help to attenuate the low-flow dissolved oxygen problems." Inherent problems with this logic are:

1. The new permits were described to address SOD by requiring measurement of the insoluble TKN and TP associated with the suspended solids in the effluent. This action will not decrease the SOD. It is also unclear as to how much the average annual TN mass loading limit will decrease SOD. The planned steps to decrease SOD and the amount of the decrease should be better explained so the efficacy of these draft permits in decreasing SOD can be evaluated.
2. The TN targets in these permits are high in comparison to what is needed to continue to promote eutrophication of this stream, which is already impaired because of too much nutrient pollution. In addition, high NH₃N will continue to be allowed to be discharged by these facilities and it is a preferred source of nitrogen for many nuisance algae. The draft writing states the new permits require additional nitrogen reduction, but do not include information as to how much nitrogen reduction will be imposed.
3. The Division acknowledges the in-stream "nutrient/eutrophication biological indicators" have been specifically identified as needing additional controls, so the new permits include average monthly TP limits for the critical summer season of 5.7 mg/L for Lynwood STP and 3.5 mg/L for Cartwright Creek STP. However, these limits are very high relative to what is needed to promote noxious algal blooms, nor are they based upon an analysis of the assimilative capacity of the receiving waters.

4. The 2004 TMDL targeted CBOD₅, as well as TN to address the low dissolved oxygen impairment. Yet the draft permits retain the same CBOD₅ limits as the old permits. Section R7.2 of the permits notes these facilities are required to remove at least 85% of the CBOD₅ and TSS entering each facility on a daily basis, as the *minimum* requirement for all municipal treatment facilities contained in CFR 40 § 133.102. Therefore, the minimum is continuing to be required of these STPs, despite the known impairment of receiving waters, and despite the identified concern solids are accumulating in the series of pools.

Thank you again for the opportunity to comment on these permits. We look forward to hearing from the Division.

Sincerely,



Dana L. Wright
Director of Policy and Legislative Affairs

Attached: 1. *Review of the document, "Draft of NPDES Permit No. TN0028827 – Franklin STP, Williamson County, Tennessee"*
 2. *Review of the document, "Draft of NPDES Permit No. TN0029718 – Lynwood Utility Corporation STP in Franklin, Williamson County, Tennessee"*
 3. *Review of the document, "Draft of NPDES Permit No. TN0027278 – Cartwright Creek-Grassland STP in Franklin, Williamson County, Tennessee"*

Cc: Mr. Tyler Ring, President, Lynwood Utility Corporation
 Mr. Mark Hilty, Director, Franklin Water Management Department
 Mr. Bruce Meyer, Regional Manager, Cartwright Creek, LLC
 Ms. Dorie Bolze, Executive Director, Harpeth River Watershed Association

Review of the document, "Draft of NPDES Permit No. TN0028827 – Franklin STP, Williamson County, Tennessee"

By Dr. JoAnn Burkholder

Effluent limitations (nutrients, SS, overflows/bypasses)

Five-day carbonaceous biochemical oxygen demand (CBOD₅) [new, lower] - summer monthly avg. 4 mg/L, weekly avg. 6 mg/L, daily maximum 8 mg/L; winter monthly avg. 10 mg/L, weekly avg. 15 mg/L, daily maximum 20 mg/L

Ultimate BOD₅ [new] - report

Ammonia (NH₃N) [new, lower] summer monthly avg. 0.4 mg/L; weekly avg. 0.6 mg/L; daily maximum 0.8 mg/L

winter monthly avg. 1.5 mg/L; weekly avg. 2.3 mg/L; daily maximum 3 mg/L

Total nitrogen (TN) summer 5 mg/L; winter - report;

the 2004 TMDL represents annual TN mass loading discharge limits (in pounds per day) on an annual basis - annual TN average permit limit \leq 290 pounds per day

Note: the TN limit of 5.0 mg/L as a monthly average with a summer seasonal average maximum of 377 pounds per day is pursuant to the TMDL requirements; an additional TMDL requirement is to achieve 290 pounds per day TN on an annual basis.

Total phosphorus (TP) [new] - summer monthly avg. 3 mg/L; winter - report

Suspended solids (SS) - [new, lower] summer monthly avg. 10 mg/L; weekly avg. 40 mg/L; daily maximum 45 mg/L;

winter monthly avg. 30 mg/L, weekly avg. 40 mg/L, daily maximum 45 mg/L

Total copper and total silver - [new] 0.075 mg/L and 0.01 mg/L, respectively, as treated effluent daily maxima

Overflows, bypasses - report

The Franklin sewage treatment plant (STP) has an advanced treatment system with extended aeration activated sludge, tertiary filtration with denitrification, and UV disinfection. The effluent from this wastewater treatment plant (WWTP) consists of 99% municipal waste flow and 1% industrial waste flow. The permit allows water reuse through land application via spray or drip irrigation.

Overall Assessment

The Harpeth River is on the state's 303(d) list - its water quality is impaired to the extent that it can no longer support its designated uses for fish and aquatic life. Causes of impairment were identified as intermittent low dissolved oxygen during summer low-flow conditions, and "nutrient/eutrophication biological indicators" that were not described. TN DEC attributes the impaired status of this stream mostly to nonpoint sources, especially storm sewer systems, rather than this point source (p.R-2). This is noteworthy especially considering that the Franklin STP discharges from Outfall 001 to the Harpeth River at river mile 85.2. This STP, with design capacity of 12 mgd, can "swamp" the natural flow of the stream (low flow 7Q10, 0.49 mgd in that segment). Thus, this point source, although not yet at full capacity, has the potential to contribute up to ~24-fold more than the natural stream flow. Moreover, a series of pools make this stream more vulnerable to pollutant impacts. *Considering these facts collectively, I expect that the discharge from this STP under its new permit will continue to significantly influence the receiving segment of this 303(d)-listed stream.*

The new permit incorporates requirements from the 2004 TMDL for the Harpeth River. It will include additional discharge requirements (substantially lower NH₃N, TN, and SS in summer), a monthly average limit for TP concentration, decreased CBOD₅ limits, and ultimate BOD monitoring, although the permitted level of TP remains high relative to concentrations that have been linked to noxious algal blooms (~100 µg/L). Moreover, if the TN is mostly nitrate + bioavailable organic N, a value of 5 mg/L is excessive in comparison to concentrations that can promote noxious algal blooms (~100 µg/L). This stream is already impaired for nutrient/eutrophication biological indicators. Investigational requirements will include the development and implementation of a Nutrient Management Plan (NMP), expanded instream monitoring

(1 upstream site, 2 downstream sites; diurnal monitoring with automated sondes and corresponding metadata; macroinvertebrate monitoring), and chronic biomonitoring tests for effluent toxicity. The WWTP recently expanded, and TN DEC has identified a need for additional effluent data/instream information. Thus, the permittee is also being required to develop an Integrated Water Management Plan (IWMP) that will address options for further upgrading treatment plant performance. The draft permit includes relatively low *Escherichia coli* limits to protect the health of people who may come into contact with the receiving stream water. Helpful explanation about *E. coli* standards was included in this draft document (p.R-9). The well-designed diurnal monitoring and macroinvertebrate monitoring will yield valuable information, and the decreased NH_3N will benefit the stream ecosystem. Nevertheless, some serious shortcomings remain which should be addressed:

- The permit should clarify the amount of nitrate in the effluent discharge, and also the amount of bioavailable organic N, which are important forms of N for causing continued impairment related to eutrophication.
- The permit should clearly explain the involvement of the Jones Creek STP permit in considerations about the Franklin STP permit (p.R-8: The permittee is required to complete an extensive instream investigation to more clearly determine the impact of its treated wastewater, but additional information about this point source would be helpful).
- Chemical monitoring of receiving stream water quality is to be required at three locations (1 upstream, 2 downstream), but only one sample is to be collected mid-depth, mid-channel. Replicates are needed. The instream samples are to be collected once per week between the hours of 6 am to 8 am, but this very early morning schedule will not detect high pH from algal blooms that may develop downstream in response to nutrient over-enrichment (e.g. phosphorus) from the WWTP. Mid-day monitoring would be required, so it would be helpful to consider scheduling the chemical monitoring during mid-day rather than early morning.
- It would be helpful to collect additional nutrient series data to coincide with the macroinvertebrate biomonitoring.
- The chronic biomonitoring for effluent toxicity will yield helpful information, but it is infrequently required (a minimum of three 24-hour proportionate composite samples of final effluent collected on days 1, 3 and 5) unless there is a test failure. In the event of two consecutive test failures or of three test failures within a 12-month period for the same outfall, the permittee is required to initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study, but even then, biomonitoring is only required quarterly (until two consecutive tests demonstrate compliance). No requirements were specified for monitoring toxic chemical environmental contaminants in the effluent, which have become of increasing concern for human health.
- Toxic contaminants chromium (trivalent, hexavalent), copper, lead, nickel, zinc, cadmium, mercury, silver, total phenols, and cyanide are required to be monitored in the influent and effluent only "at least once" during each reporting period (p.21). These pollutants along with 13 others are also required to be monitored "at least once during the term of this permit". These are extremely low monitoring frequencies. No information is given about the 1% industrial effluent and its main toxic pollutant contributions, which would help guide assessment of the toxic substance monitoring. [Readers were informed (p.R-10) that pass-through limitations for heavy metals and other toxic substances were recalculated as part of the permit reissuance process and/or due to changes in the industrial waste contribution to the WWTP.]
- There is no mention of pharmaceuticals, hormones and various other toxic chemical environmental contaminants (CECs) that have become of increasing concern for the health of aquatic life as well as humans. P.R-36 includes information about many CECs; this table requires further clarification (date(s) when in-stream background concentrations were measured? Explain the permit appl.; are these constituents measured and if so, how often?).
- The basis for the new required treated effluent daily maxima for total copper and total silver is to be semi-annual monitoring, which is extremely infrequent.
- TN DEC will require a reduction in SS to 10 mg/L as a monthly average during summer because of concern about the insoluble N and P discharged in that season. Because of the additional concern that pools along the stream are being impacted by high SS, it would be helpful for the agency to limit SS during winter months as well, which should be achievable with the present technology of this WWTP.

- The planned steps to decrease SOD, and the amount of the decrease, should be better explained (p.R-7).
- TN DEC acknowledges that instream nutrient/eutrophication biological indicators have been specifically identified as needing additional controls, so the draft permit includes an average monthly TP limit for the critical summer season. However, as mentioned, the selected target of 3 mg/L is high relative to what is needed to promote noxious algal blooms. Moreover, this limit should be based upon an analysis of the assimilative capacity of this stream segment in summer. Instead, it was based upon the treatment plant's demonstrated performance (p.R-28), despite the fact that instream phosphate has been specifically identified as indicating that supplementary water quality additional controls that are needed (p.R-7).

General Weaknesses

The permittee is relieved of the "Overflows are prohibited" requirement if the cumulative, peak-design flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. This allowance is not antidegradation; it seems instead to target a goal of "status quo" in this 303(d)-listed stream.

The permittee shall submit the results of an Industrial Waste Survey (IWS) within 120 days of the effective date of the permit. Development of a pretreatment program may be required after completion of the industrial use review. Substantial potential industrial waste problems could occur during the 120-day period.

Prohibited discharges include "pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems". There should also be provision to protect workers and others in the area from *chronic* health problems.

A warning sign for the general public is required only if there have been 5 or more bypasses/overflows within the previous year. It would be more protective of public health to post the affected area after each spill.

Reference site is defined as "least impacted waters within an ecoregion". This may differ greatly from the natural condition of streams in the area prior to human alteration.

RATIONALE

Cartwright Creek - Grasslands STP
NPDES PERMIT No. TN0027278
Permit Writer: Gary Davis

R1. FACILITY INFORMATION

Cartwright Creek - Grasslands STP
Mr. Bruce Meyer - Regional Manager
Franklin, Williamson County, Tennessee
(615) 261-8600
Treatment Plant Design Flow: 0.25 MGD
Percentage Industrial Flow: 0%
Treatment Description: Extended aeration activated sludge, tertiary
filtration and treated effluent chlorination/dechlorination

R2. RECEIVING STREAM INFORMATION

Harpeth River at mile 77.9
Watershed Group: Harpeth
Hydrocode: 5130204
Low Flow: 7Q10 = 2.86 MGD (4.42 CFS)
30Q5 = 7.53 MGD (11.65 CFS)
Low-Flow Reference:
USGS StreamStat – Streamflow Statistics (7Q10 for Outfall 001
Discharge Location) w/30Q5 Estimated

Designated Stream Uses & Water Quality Status:

| Domestic Wtr Supply | Industrial | Fish & Aquatic | Recreation |
|----------------------|------------|----------------|------------|
| -- | -- | (a) | (b) |
| Livestock Wtr & Wlfe | Irrigation | Navigation | |
| (c) | (c) | -- | |

(a) Not Fully Supporting
(b) Not Assessed
(c) Fully Supporting

R3. CURRENT PERMIT STATUS

Permit Type: Municipal
Classification: Minor
Expiration Date: November 30, 2006
Effective Date: January 1, 2002

R4. PERMIT RENEWAL CONSIDERATIONS

- a. The permittee operates its advanced wastewater treatment system (extended aeration activated sludge with tertiary filtration). Sludge disposal is via landfilling. The treatment system's performance has been reduced due to significant collection system inflow/infiltration (I/I) problems and it has mechanical problems since it has been operating for approximately 30 years. The permittee's wastewater treatment system is schematically shown in Appendix 1.
- b. For reference, the permittee's current NPDES permit limitations and monitoring requirements are summarized in Appendix 2.
- c. The treatment system's design capacity is 0.25 MGD, however as presented in the Appendix 3 Discharge Monitoring Report (DMR) results, due to the large amount of I/I, the average monthly flow was 0.402 MGD, which decreased the raw wastewater CBOD₅ and TSS strengths to 114 and 85 mg/l, respectively. Increased flows can adversely impact treatment performance e.g., by decreasing the hydraulic retention time in the system and exceeding the capabilities of hydraulically designed treatment units. Additionally, the permittee has had some analytical testing difficulties.
- d. The receiving stream's Fish and Aquatic Life designated usage is not being fully supporting due to intermittent decreased instream dissolved oxygen (associated with summer low-flow conditions) and nutrient/eutrophication biological indicators. The division considers these conditions to be due primarily to non-point discharges rather than the permittee's discharge, and is associated with discharges from municipal separate storm sewer systems (MS4) and municipal point sources. Since the permittee's Outfall 001 contains contaminants which the division considers as contributing to the "not fully supporting" designated usage, the new permit includes numerous provisions for making improvements in the receiving stream's water quality.
- e. The new permit includes additional Outfall 001 discharge requirements, e.g., treated effluent monthly average total nitrogen and total phosphorus concentration limits for summer months (May through October) with winter reporting, an annual total nitrogen mass loading discharge limit, and as a special condition, the development and implementation of a Nutrient Management Plan (NMP) with reporting. However, the permittee's current permit Outfall 001 discharge does not have total nitrogen nor phosphorus monitoring requirements. Thus, only the following permit application data are available:

**Permit Renewal Application Data
(Based on 3 Samples)**

| Treated Effluent Parameter | Application Results | |
|--------------------------------|---------------------|-------------------|
| | Average (mg/l) | Maximum (mg/l) |
| Nitrogen | | |
| Ammonia Nitrogen (as N) | 0.71 | 4.6 |
| Total Kjeldahl Nitrogen (as N) | 1.0 | 1.5 |
| Nitrite + Nitrate (as N) | 5.9 | 7.0 |
| Total Nitrogen (as N) | 6.9 | 8.5 |
| Phosphorus (as P) | 1.34 | 1.98 |

Note: Total nitrogen was calculated (sum of nitrite + nitrate and total Kjeldahl nitrogen).

Relative to the new permit's Outfall 001 treated effluent nutrient limitations as discussed in Section R7.5, denitrification would appear to be required, along with other total nitrogen controls, considering the I/I impact. The above Outfall 001 treated effluent total phosphorus is appears to relatively low, probably primarily due to I/I.

- f. Requirements for the Harpeth River Watershed (HUC 05130204) presented in the September 2004 "Final Organic Enrichment/Low Dissolved Oxygen, Total Maximum Daily Load (TMDL) were integrated into the new permit.
- g. Although the new permit is of short duration (expiration date = November 30, 2011) and includes new Outfall 001 discharge limitations (e.g., total nitrogen and total phosphorus), the division will require the permittee to demonstrate diligent operation of its wastewater treatment system throughout its upgrading process and collect additional treatment plant effluent characterization data.
- h. The division now includes *E. coli* limits on treated sewage discharges for the protection of recreational use of the stream in lieu of fecal coliform limits.

R5. PERMIT COMPLIANCE SCHEDULE SUMMARY

Compliance Schedule Summary

| Description of Report to be Submitted | Reference Section in Permit |
|--------------------------------------------------------------------------------------|--------------------------------|
| Monthly Discharge Monitoring Report (DMR) | 1.3.1 |
| Monthly Operating Report (MOR) | 1.3.4 |
| Monthly Bypass and Overflow Summary Report | 1.3.5.1 |
| Sludge analysis must be submitted by February 19 th of each calendar year | 3.3.a |
| Nutrient Management Plan (NMP) Report | 3.5 |

R6. CURRENT PERMIT DISCHARGE MONITORING REPORT (DMR) AND PERMIT COMPLIANCE INSPECTION RESULTS

The DMR results provided in Appendix 3 show that the permittee has had permit compliance problems, due to extensive inflow/infiltration within the collection system, mechanical breakdowns due to the treatment system's age, and sampling/analytical technique shortcomings.

R7. NEW PERMIT REQUIREMENTS RATIONALE

This section provides the rationale for the new permit's Outfall 001 discharge limitations/monitoring requirements and special conditions.

NEW PERMIT DISCHARGE PARAMETERS AND RATIONALE REFERENCES

| Parameters | Rationale References |
|--------------------------------------------|-----------------------------------|
| Flow - Raw Wastewater and Treated Effluent | Refer to Section R7.1. |
| CBOD ₅ | Refer to Section R7.2. |
| NH ₃ -N | Refer to Sections R7.2. and R7.4. |
| Total Nitrogen and Insoluble TKN | Refer to Section R7.5. |
| Total Phosphorus and Insoluble Phosphorus | Refer to Section R7.5. |
| Total Suspended Solids | Refer to Section R7.3. |
| Dissolved Oxygen | Refer to Section R7.2. |
| Total Chlorine Residual | Refer to Section R7.7. |
| <i>E. coli</i> | Refer to Section R7.6. |
| Settleable Solids | Refer to Section R7.8. |
| pH | Refer to Section R7.9. |
| Sanitary Sewer Overflows | Refer to Section R7.10. |
| Dry Weather Overflows | Refer to Section R7.10. |
| Bypass of Treatment | Refer to Section R7.10. |

Note: Summer = May 1 – Oct. 31 and winter = Nov. 1 – Apr. 30. Weekly limitations on CBOD₅ and TSS concentrations are given as required per 40 CFR 133.102(a)(2) or 133.102(a)(4)(2) & 133.102 (b)(2) respectively; daily CBOD₅ and TSS limitations are authorized by T.C.A. 1200-4-5-.09; monthly and weekly mass loads are limited per 40 CFR 122.45(f) and based on the design flow as per 40 CFR 122.45(b); monthly average percent removal rates for CBOD₅ and TSS are required per 40 CFR 133.102(a)(3) or 133.102(a)(4)(iii) and 133.102 (b)(3) respectively. A minimum 40% daily removal rate is required as equivalent to a daily mass load limitation.

R7.1. FLOW

Pursuant to the new permit the permittee must continue monitoring its influent raw wastewater and treated effluent flows on a 7/week continuous basis. Flow is monitored and used to calculate contaminant mass loading rates.

R7.2. CONTROL REQUIREMENTS/MONITORING FOR CBOD₅, DISSOLVED OXYGEN, NH₃-N, AND CBOD₅ PERCENT REMOVAL

- a. The EPA completed extensive computer modeling for developing its 2004 TMDL for addressing organic enrichment and low dissolved oxygen conditions within the receiving stream. Based on the TMDL requirements, the current permit's Outfall 001 discharge CBOD₅, NH₃-N and dissolved oxygen limits will be used for the new permit. In order to consistently achieve an instream dissolved oxygen concentration at or above the required minimum of 5.0 mg/l, the TMDL noted that substantial reductions in the receiving stream's sediment oxygen demand (SOD) would be needed in conjunction with an average annual total nitrogen mass loading of ≤ 15 lb/day for the permittee's Outfall 001 discharge. The TMDL total nitrogen mass loading is a water quality based Outfall 001 discharge requirement. Since the permittee does not have actual Outfall 001 discharge performance data, the division expects a transitional period of 18 months will be required for the permittee to achieve the TMDL total nitrogen mass loading limit.
- b. The treatment facility is required to remove at least 85% of the CBOD₅ and TSS that enter the facility on a monthly basis. This is part of the minimum requirement for all municipal treatment facilities contained in Code of Federal Regulations 40 Part 133.102. The reasons stated by the U.S.E.P.A. for these requirements are to achieve these two basic objectives:
 - (1) To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems, and
 - (2) To help prevent intentional dilution of the influent wastewater as a means of meeting permit limits.

The treatment facility is required to remove at least 40% of the CBOD₅ and TSS that enter the facility on a daily basis. This percent removal will be calculated based on its daily monitoring results and recorded on the Monthly Operating Report (MOR). The number of excursions (days when CBOD₅ and/or TSS removal is less than 40%) will be reported on the Discharge Monitoring Report (DMR).

R7.3. TOTAL SUSPENDED SOLIDS (TSS) AND TSS REMOVAL

The current permit includes the technology-based average monthly effluent limit of 30 mg/l, pursuant to federal secondary standards (Rule 1200-4-5-.09) and this value will be retained for the new permit.

R7.4. AQUATIC TOXICITY POTENTIAL DUE TO AMMONIA NITROGEN

As shown in Appendix 4, the instream aquatic toxicity due to the Outfall 001 discharge ammonia-nitrogen values is not expected.

R7.5. TOTAL AND INSOLUBLE NITROGEN AND PHOSPHORUS

Total Nitrogen and phosphorus monitoring is imposed in support of the joint State/Federal Mississippi River/Gulf of Mexico Watershed Nutrient Task Force, Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico. Monitoring results from major municipal and industrial facilities discharging within the Mississippi River Basin will help assess current point source loadings to the Gulf and enable the task force to track changes in loadings across the basin over time. EPA believes that Section 308(a) of the Clean Water Act provides broad authority to require nutrient monitoring, even where there is no reasonable potential for a particular facility to cause or contribute to excursions of criteria within the immediate receiving waterbody. Additionally, influent monitoring of the same parameters and frequency is imposed by the state for use in evaluating ability of existing technologies to remove nutrients.

The TDML referenced in Section R4.f, highlights that inadequate dissolved oxygen (< 5.0 mg/l) within the receiving stream (upstream and downstream of the permittee's Outfall 001 discharge) under low-flow summer conditions occurs, and discusses the corresponding role of nutrients (total nitrogen and phosphorus) for some portions of the receiving stream. For NPDES dischargers above the Franklin STP (TN0028827), the TMDL specifies required total nitrogen and total phosphorus discharge mass loadings under summer and winter conditions (the ratio of the total nitrogen to total phosphorus mass loadings for these upstream dischargers was 2:1). However, for the permittee Outfall 001 treated wastewater, and (local upstream dischargers) Franklin STP TN0028827 and Lynwood Utility Corp. STP TN0029718, the TMDL represents total nitrogen mass loading discharge limits (lb/day) on an annual basis. The TMDL annual total nitrogen mass loading discharge limits will be used for the new permits for these three dischargers. As such, the following rationale was used to define treated effluent total and insoluble nitrogen and phosphorus limits and monitoring requirements as follows:

- Total and Insoluble Nitrogen Requirements
- Total and Insoluble Phosphorus Requirements
- Nutrient Management Plan Development and Implementation

Unless additional time is provided in writing by the division, the permittee must implement supplementary wastewater treatment system controls for achieving the new permit Outfall 001 discharge summer total nitrogen and total phosphorus limitations presented subsequently in this section within 18 months from the new permit's effective date. The permittee must monitor/report these Outfall 001 parameters for period before the limits become effective. As discussed subsequently, this new permit also requires the permittee to develop/implement a Nutrient Management Plan (NMP), to provide further for treatment enhancements.

Total and Insoluble Nitrogen Requirements

The new permit includes the 2004 TMDL total nitrogen average mass loading Outfall 001 discharge requirement on an annual basis requirement of ≤ 15 lb/day. The permittee must also achieve an equivalent treated effluent quality as the Lynwood

Utility Corp. STP (TN0029718) (adjusted for I/I as discussed later in this section) pursuant to its current permit total nitrogen limits and monitoring requirements for summer (May through October) operation, with winter total nitrogen monitoring. The new permit also includes an Outfall 001 discharge average monthly total nitrogen of 1.9 mg/l limit (based on the Lynwood Utility Corp. STP TN0029718 new permit 3.0 mg/l limit * design flow/monthly avg. DMR flow = 3.0 mg/l * 0.25 MGD/0.402 MGD).

Due to the receiving stream's unusual serial pools arrangement, which the division considers problematic, the Outfall 001 discharge effluent suspended solids may settle/accumulate under the instream pond-like conditions during summer low flow conditions. Settled solids, thicken and lower portions undergo anaerobic digestion, with nutrients release to the water column. The 2004 TMDL noted the SOD's impact on the receiving stream and need for its reduction. As such, the new permit also requires the permittee to determine the insoluble TKN and total phosphorus associated with its Outfall 001 effluent suspended solids.

Total and Insoluble Phosphorus Requirements

The 2004 TMDL does not specifically present the Outfall 001 discharge total phosphorus mass loading requirements for the permittee. However, as presented in the 2008 303(d) listing, the receiving stream is now identified as not fully supporting its fish and aquatic life use due to low dissolved oxygen and nutrient/eutrophication biological indicators. As such, since the permittee's discharge also includes phosphorus, additional control requirements are incorporated in the new permit to reduce the potential for these receiving stream water quality shortcomings. The TMDL noted that this segment was considered to be nitrogen-limited and as such, the additional total nitrogen reduction requirements along with decreases in the sediment oxygen demand (SOD) should help to attenuate the low-flow dissolved oxygen problems. However, since instream "nutrient/eutrophication biological indicators" has now been specifically identified as needing additional controls, the new permit includes an average monthly total phosphorus 3.5 mg/l limit (based on the Lynwood Utility Corp. STP TN0029718 new permit 5.7 mg/l limit * design flow/monthly avg. DMR flow = 5.7 mg/l * 0.25 MGD/0.402 MGD).

The rationale for monitoring the treated effluent insoluble total phosphorus in the new permit is presented above, pursuant to the basis provided for insoluble TKN monitoring.

Nutrient Management Plan (NMP)/Report

As a permit condition, the division required another discharger within the Harpeth River watershed (Water Authority of Dickson County – Jones Creek STP TN0066958) to develop/implement a Nutrient Management Plan (NMP) for identifying changes in operation of its wastewater treatment facilities for improved nutrient control. The permittee must develop/implement its NMP to include, at a minimum, the elements presented in the new permit's Attachment 1 and discussed in Appendix 5.

R7.6. *E. coli*

Wastewater disinfection is required to protect the receiving stream from pathogenic microorganisms. Fecal coliform and *E. coli* are indicator organisms used as a measure of bacteriological health of a receiving stream and the effectiveness of disinfection.

As of September 30, 2004, the criterion for fecal coliform has been removed from the State's Water Quality Standards. Thus, the division imposes an *E. coli* limit on discharges of treated sewage for the protection of recreational use of the stream in lieu of the fecal coliform limit. The *E. coli* daily maximum limit of 487 cfu per 100 ml applies to lakes and Exceptional Tennessee Waters. A maximum daily limit of 941 cfu per 100 ml applies to all other recreational waters. The new permit includes a 126 cfu/100 ml monthly average *E. coli* limit (based on the geometric mean) with a 941 cfu/100 ml daily maximum value limit.

R7.7. TOTAL RESIDUAL CHLORINE

The total residual chlorine limit is derived using the mass balance formula and the EPA instream protection value of 0.019 mg/l for fish and aquatic life. Applying this formula yields the following calculation:

$$\frac{0.019 (Q_d + Q_s)}{Q_d} = \text{Limit (mg/l)} = \frac{0.019 (0.25 + 2.86)}{0.25} = 0.24 \text{ mg/l}$$

where:

| | | |
|-------|---|------------------------------------------------------------------|
| 0.019 | = | instream acute protection value (mg/l) |
| 0.25 | = | Q _d , design flow of STP (MGD) |
| 2.86 | = | Q _s , 7Q ₁₀ flow of receiving stream (MGD) |

Therefore, the new permit will include a total residual chlorine limit of 0.24 mg/l instead of the 0.25 mg/l in the current permit.

R7.8. SETTLEABLE SOLIDS

Settleable solids results provide an indication of the treatment system performance. The treated effluent settleable solids limitation (1.0 ml/L) included in the current permit will be used for the new permit.

R7.9. pH

The permittee's must continue to comply with secondary treatment technology pH limitations (6.0 to 9.0 s.u.) for its treated effluent. The current permit's pH limits of 6.0 to 9.0 s.u. will be included in the new permit.

R7.10. OVERFLOW AND BYPASS REPORTING

For the purposes of demonstrating proper operation of the collection, transmission, and treatment system, the permit defines overflow as any release of sewage other than through permitted outfalls. This definition includes, but is not necessarily limited to, sanitary sewer overflows and dry weather overflows. For example, a collection system blockage or hydraulic overload that causes backup and release of sewage into a building during a wet weather event may not clearly fit either the definition of a sanitary sewer overflow or a dry weather overflow. However, any unpermitted release potentially warrants permittee mitigation of human health and/or water quality impacts via direct or indirect contact and demonstrates a hydraulic problem in the system that needs permittee consideration as part of proper operation and maintenance of the system.

For the more typical, unpermitted, releases into the environment, this permit intends interchangeable use of the terms, "overflow" and "sanitary sewer overflow" for compliance reporting purposes.

R7.11. CERTIFIED WASTEWATER TREATMENT OPERATOR

The waste treatment facilities shall be operated under the supervision of a Grade III certified wastewater treatment operator in accordance with the Water Environmental Health Act of 1984.

R7.12. COLLECTION SYSTEM CERTIFIED OPERATOR

The collection system shall be operated under the supervision of a certified Grade I collection system operator in accordance with the Water Environmental Health Act of 1984.

R7.13. PERMIT TERM

This permit will expire in calendar year 2011 in order to coordinate its reissuance with other permits located within the Harpeth Watershed.

R7.14. ANTIDEGRADATION STATEMENT/WATER QUALITY STATUS

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 1200-4-3-.06. It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.

Stream determinations for this permit action are associated with the waterbody segment identified by the division as segment ID# TN05130204009_3000. The division has made a water quality assessment of the receiving waters associated with the permittee's treated wastewater discharge and has determined that the receiving stream to be neither an exceptional nor outstanding national resource water. Additionally, this receiving stream water does not fully support its fish and aquatic life designated uses due to decreased dissolved oxygen and nutrient/

eutrophication biological indicators from discharges from municipal separate storm sewer systems (MS4) and municipal point sources.

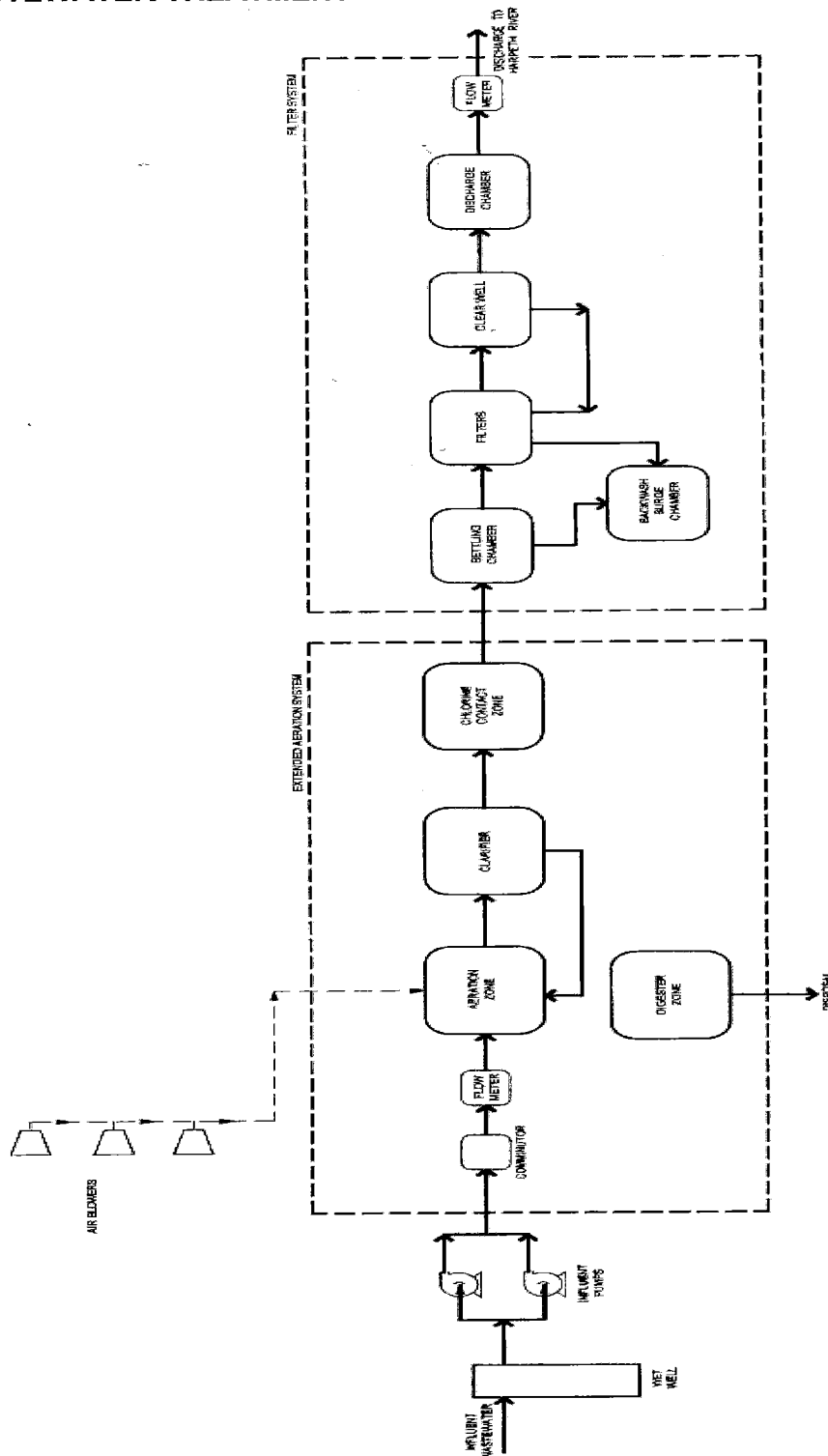
The permittee's Outfall 001 discharge from Outfall 001 contains contaminants associated with the decreased receiving stream dissolved oxygen and nutrients (total nitrogen and phosphorus). The new permit includes several additional Outfall 001 discharge limits and supplementary monitoring requirements which are focused on making instream improvements and remedying the receiving stream's low dissolved oxygen and nutrient/eutrophication biological indicators water quality shortcomings. An 18 month compliance schedule has been included in the new permit to allow the permittee to make treatment system enhancements for achieving the treated wastewater nutrients (total nitrogen and total phosphorus) limitations. As discussed in the 2004 TMDL referenced subsequently, upgrades for upstream decreased dissolved oxygen, total nitrogen and phosphorus are also required.

A TMDL has been developed and approved for this waterbody segment for the following Outfall 001 discharge parameters:

| <u>Parameters</u> | <u>TMDL Approval Date</u> |
|--------------------------------------|---------------------------|
| CBOD ₅ and Total Nitrogen | September 2004 |

The new permit's terms and conditions are consistent with the TMDL's required wasteload allocations.

**APPENDIX 1
 WASTEWATER TREATMENT PLANT SCHEMATIC DIAGRAM**



CARTWRIGHT CREEK BLOCK FLOW DIAGRAM

**APPENDIX 2
CURRENT PERMIT LIMITATIONS AND MONITORING REQUIREMENTS**

| Effluent Characteristics | Effluent Limitations | | | | | | | Monitoring Requirements | | |
|------------------------------------------|------------------------------|---------------------------------|-----------------------------|--------------------------------|----------------------------|-------------------------------|--|-------------------------|------------------------|----------------------|
| | Monthly Average Conc. (mg/l) | Monthly Average Amount (lb/day) | Weekly Average Conc. (mg/l) | Weekly Average Amount (lb/day) | Daily Maximum Conc. (mg/l) | Daily Minimum Percent Removal | | Measurement Frequency | Sample Type | Sampling Point |
| CBOD ₅ (May 1 - Oct. 31) | 5 Report | 10 | 7.5 | 16 | 10 Report | 40 | | 3/week 3/week | composite composite | effluent influent |
| CBOD ₅ (Nov. 1 - April 30) | 10 Report | 21 | 15 | 31 | 20 Report | 40 | | 3/week 3/week | composite composite | effluent influent |
| Ammonia as N (May 1 - Oct. 31) | 2 | 4 | 3 | 6 | 4 | | | 3/week | composite | effluent |
| Ammonia as N (Nov. 1 - April 30) | 5 | 10 | 7.5 | 16 | 10 | | | 3/week | composite | effluent |
| Suspended Solids | 30 Report | 63 | 40 | 83 | 45 Report | 40 | | 3/week 3/week | composite composite | effluent influent |

Note: The permittee shall achieve ~~85~~ 85% removal of CBOD₅ and TSS on a monthly average basis. The permittee shall report all instances of overflow and/or bypasses.

| Effluent Characteristics | Effluent Limitations | | | Monitoring Requirements | | |
|---------------------------|----------------------------------------------|---------------------------|----------------------------|-------------------------|--------------------------|---------------------|
| | Monthly Average | Daily Minimum | Daily Maximum | Measurement Frequency | Sample Type | Sampling Point |
| Fecal Coliform | 200/100 ml (see the following paragraphs) | | 1000/100 ml | 3/week | grab | effluent |
| <i>E. coli</i> | 126/100 ml (see the following paragraphs) | | | 3/week | grab | effluent |
| Chlorine residual (Total) | | | 0.25 mg/l instantaneous | 5/week | grab | effluent |
| Settleable solids | | | 1.0 ml/l | 5/week | composite | effluent |
| Dissolved oxygen | | 6.0 mg/l instantaneous | | 5/week | grab | effluent |
| pH (Standard Units) | | 6.0 | 9.0 | 5/week | grab | effluent |
| Flow (MGD) | Report Report | | Report Report | 7/week 7/week | continuous continuous | inluent effluent |

Appendix 3
DISCHARGE MONITORING REPORT (DMR) RESULTS

| | Effluent Flow (MGD) | | | CBOD5 | | | Suspended Solids | | | Effluent (mg/l) | | | | | | Fecal Coliform | | | E. coli | Bypassing | Overflows |
|--------|------------------------|------------------|---------------|---------------------------------|-----------|-----------|------------------|---------------------------------|-----------|-----------------|--------------------------|-----------------|---------------------------|-----------------|-----------|----------------|-----------|-----|---------|-----------|-----------|
| | Monthly Average Report | Daily Max Report | (mg/l) Report | Effluent (mg/l) Monthly Average | Daily Max | % Removal | (mg/l) Report | Effluent (mg/l) Monthly Average | Daily Max | % Removal | Settleable Solids (mg/l) | pH (std. units) | Cl ₂ Daily Max | Monthly Average | Daily Max | Daily Min | Daily Max | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| Limits | | | | 5 | 10 | 85 | Report | 30 | 45 | 85 | 1.0 | 6.0 | 9.0 | 0.025 | 2 | 4 | 6.0 | 126 | | | |
| Summer | | | | 10 | 20 | | | 30 | 45 | | | | | 0.025 | 5 | 10 | | | | | |
| Winter | | | | 2 | 3 | | | 58 | 3 | 8 | | 1 | 7.1 | 7.5 | | | 7.9 | 4 | 100 | | |
| Jan/02 | 0.400 | 0.475 | 144 | 2 | 3 | | | 58 | 3 | 8 | | 1 | 7.1 | 7.5 | | | 7.9 | 4 | 100 | | |
| Feb/02 | 0.400 | 0.475 | 118 | 1 | 3 | | | 58 | 4 | 8 | | 1 | 7.1 | 7.5 | | | 7.1 | 8 | 380 | | |
| Mar/02 | 0.380 | 0.581 | 58 | 2 | 7 | 96 | | 45 | 13 | 124 | + | 1.0 | 7.2 | 7.8 | | | 6.8 | 4 | 520 | | |
| Apr/02 | 0.350 | 0.521 | 68 | 2 | 3 | 96.9 | | 57 | 4 | 11 | 91.7 | | 1 | 7.1 | 7.5 | | | 3 | 170 | 5 | |
| May/02 | 0.317 | 0.467 | 87 | 2 | 3 | 97.5 | | 80 | 5 | 14 | 93.7 | | 1 | 7.1 | 7.6 | | | 23 | 190 | 20 | |
| Jun/02 | 0.271 | 0.321 | 95 | 2 | 3 | 98.2 | | 86 | 3 | 6 | 94.2 | | 1 | 7.2 | 7.6 | | | 6 | 110 | 5 | |
| Jul/02 | 0.274 | 0.329 | 126 | 2 | 4 | 98.3 | | 118 | 4 | 12 | 96.1 | | 1 | 7.1 | 7.6 | | | 9 | 130 | 20 | |
| Aug/02 | 0.271 | 0.361 | 123 | 2 | 3 | 98.4 | | 87 | 4 | 11 | 95.8 | | 1 | 7.1 | 7.1 | | | 6.1 | 9 | 130 | 20 |
| Sep/02 | 0.285 | 0.483 | 120 | 2 | 4 | 98.6 | | 80 | 3 | 7 | 95.1 | | 1 | 7.2 | 7.5 | | | 6.1 | 9 | 130 | 20 |
| Oct/02 | 0.334 | 0.438 | 98 | 2 | 4 | 98 | | 67 | 2 | 8 | 95.2 | | 5 | 7.1 | 7.6 | | | 6.3 | 18 | 510 | 20 |
| Nov/02 | 0.226 | 0.433 | 237 | 3 | 6 | 98.5 | | 32 | 5 | 96.8 | | 5 | 6.8 | 7.6 | | | 6.8 | 6 | 80 | 5 | |
| Dec/02 | 0.241 | 0.353 | 264 | 3 | 5 | 98.8 | | 180 | 27 | 6 | 97.6 | | 5 | 6.9 | 7.3 | | | 9.1 | 6 | 31 | 6 |
| Jan/03 | 0.355 | 0.477 | 112 | 8 | 24 | 92 | | 78 | 25 | 109 | + | 3 | 7.2 | 8.4 | | | 6.8 | 8 | 32 | 11 | |
| Feb/03 | 0.518 | 0.834 | 86 | 7 | 31 | 90.6 | | 52 | 13 | 46 | 71.1 | + | 3.5 | 7.0 | 7.5 | | | 6.4 | 12 | 204 | 16 |
| Mar/03 | 0.424 | 0.533 | 124 | 3 | 8 | 97.3 | | 120 | 6 | 13 | 94.9 | | 5 | 7.2 | 7.6 | | | 6.1 | 5 | 24 | 7 |
| Apr/03 | 0.440 | 0.575 | 109 | 2 | 5 | 97.9 | | 83 | 5 | 16 | 93.8 | | 5 | 7.1 | 7.6 | | | 6.1 | 4 | 27 | |
| May/03 | 0.434 | 0.790 | 104 | 2 | 7 | 97.8 | | 77 | 8 | 28 | 90.1 | | 9 | 7.0 | 7.5 | | | 6.1 | 11 | 190 | 10 |
| Jun/03 | 0.390 | 0.492 | 146 | 3 | 6 | 98.2 | | 73 | 7 | 15 | 90.2 | | 5 | 7.0 | 7.5 | | | 6.8 | 10 | 150 | 13 |
| Jul/03 | 0.336 | 0.426 | 150 | 2 | 3 | 98.7 | | 92 | 3 | 8 | 96.2 | | 5 | 7.1 | 7.4 | | | 6.3 | 5 | 22 | 9 |
| Aug/03 | 0.364 | 0.501 | 121 | 2 | 3 | 98.6 | | 98 | 2 | 6 | 97.6 | | 5 | 7.2 | 7.8 | | | 6.0 | 2 | 15 | 3 |
| Sep/03 | 0.367 | 0.478 | 146 | 3 | 9 | 98 | | 88 | 3 | 6 | 96.8 | | 5 | 7.2 | 7.6 | | | 6.1 | 5 | 17 | 9 |
| Oct/03 | 0.340 | 0.436 | 189 | 2 | 3 | 99.1 | | 146 | 3 | 11 | 97.9 | | 5 | 7.1 | 7.5 | | | 6.9 | 9 | 28 | 11 |
| Nov/03 | 0.370 | 0.478 | 139 | 6 | 21 | 97.6 | | 78 | 4 | 11 | 94.5 | | 5 | 7.1 | 7.9 | | | 7.1 | 7 | 65 | 9 |
| Dec/03 | 0.417 | 0.644 | 139 | 6 | 21 | 95.8 | | 104 | 5 | 23 | 95.1 | | 1 | 7.1 | 7.6 | | | 7.1 | 11 | 106 | 11 |
| Jan/04 | 0.398 | 0.502 | 85 | 10 | 72 | 98.6 | | 63 | 25 | 260 | + | 100 | 7 | 7.1 | 7.6 | | | 6.3 | 11 | 61 | 12 |
| Feb/04 | 0.452 | 0.876 | 98 | 9 | 60 | 90.9 | | 80 | 21 | 126 | + | 7 | 7.2 | 7.6 | | | 7.3 | 8 | 89 | 9 | |
| Mar/04 | 0.496 | 0.545 | 130 | 12 | 12 | 96.3 | | 90 | 8 | 25 | 74 | + | 1 | 7.1 | 7.6 | | | 6.9 | 16 | 189 | 15 |
| Apr/04 | 0.420 | 0.539 | 133 | 8 | 12 | 96.3 | | 90 | 21 | 75 | + | 9 | 7.3 | 8.0 | | | 6.8 | 17 | 38 | 19 | |
| May/04 | 0.409 | 0.549 | 102 | 12 | 40 | 88.3 | | 93 | 30 | 141 | + | 4 | 7.2 | 7.8 | | | 6.1 | 44 | 700 | 45 | |
| Jun/04 | 0.361 | 0.463 | 127 | 10 | 29 | 92.2 | | 84 | 16 | 87 | + | 5 | 6.8 | 7.6 | | | 6.0 | 29 | 207 | 40 | |
| Jul/04 | 0.367 | 0.430 | 127 | 5 | 10 | 96.1 | | 100 | 15 | 56 | + | 3 | 7.1 | 7.5 | | | 6.0 | 25 | 165 | 23 | |
| Aug/04 | 0.363 | 0.456 | 120 | 3 | 6 | 97.8 | | 78 | | | 95.3 | | 12 | 7.2 | 7.5 | | | 18 | 112 | 17 | |
| Sep/04 | 0.351 | 0.456 | 120 | 3 | 6 | 97.8 | | 78 | | | 95.3 | | 12 | 7.2 | 7.5 | | | 18 | 112 | 17 | |
| Oct/04 | 0.391 | 0.511 | 116 | 2 | 3 | 98.2 | | 101 | 6 | 18 | 94.6 | | 2 | 7.1 | 7.4 | | | 6.0 | 25 | 117 | 27 |
| Nov/04 | 0.391 | 0.511 | 116 | 2 | 3 | 98.2 | | 101 | 6 | 18 | 94.6 | | 1 | 7.1 | 7.6 | | | 6.1 | 8 | 55 | 9 |
| Dec/04 | 0.391 | 0.511 | 116 | 2 | 3 | 98.2 | | 101 | 6 | 18 | 94.6 | | 1 | 7.1 | 7.6 | | | 6.1 | 8 | 55 | 9 |
| Jan/05 | 0.490 | 0.848 | 86 | 3 | 7 | 94.7 | | 200 | 12 | 25 | 82.8 | + | 1 | 7.1 | 7.6 | | | 6.3 | 25 | 225 | 23 |
| Feb/05 | 0.450 | 0.582 | 106 | 8 | 22 | 74 | + | 76 | 20 | 49 | + | 1 | 7.2 | 7.6 | | | 6.6 | 8 | 52 | 9 | |
| Mar/05 | 0.440 | 0.558 | 98 | 6 | 22 | 94.1 | | 82 | 32 | 188 | + | 30 | 7.2 | 7.5 | | | 6.6 | 8 | 34 | 11 | |
| Apr/05 | 0.407 | 0.468 | 100 | 6 | 23 | 93.9 | | 65 | 19 | 63 | + | 7.1 | 7.1 | 7.6 | | | 4.5 | 6.9 | 9 | 40 | 11 |
| May/05 | 0.446 | 0.620 | 87 | 4 | 7 | 95.1 | | 85 | 10 | 26 | 88.2 | | 2 | 7.1 | 7.6 | | | 6.2 | 13 | 113 | 14 |
| Jun/05 | 0.388 | 0.509 | 132 | 4 | 8 | 96.7 | | 82 | 8 | 17 | 90.8 | | 1 | 7.1 | 7.6 | 05 | | 3.4 | 6.0 | 35 | 272 |
| Jul/05 | 0.367 | 0.434 | 87 | 4 | 12 | 95.8 | | 74 | 10 | 82 | + | 6 | 7.2 | 7.5 | | | 5 | 1.3 | 6.1 | 29 | 21 |
| Aug/05 | 0.361 | 0.479 | 84 | 1 | 3 | 98.5 | | 81 | 5 | 11 | 94.1 | | 1 | 7.1 | 7.4 | 05 | | 6.2 | 18 | 77 | 20 |
| Sep/05 | 0.355 | 0.503 | 80 | 4 | 13 | 94.5 | | 60 | 8 | 22 | 86.4 | | 1 | 7.1 | 7.5 | | | 6.0 | 8 | 121 | 13 |
| Oct/05 | 0.372 | 0.476 | 115 | 3 | 8 | 97.7 | | 103 | 5 | 15 | 95.2 | | 1 | 7.0 | 7.6 | | | 6.0 | 21 | 141 | 15 |
| Nov/05 | 0.321 | 0.362 | 97 | 2 | 4 | 98.3 | | 86 | 3 | 6 | 96 | | 1 | 7.2 | 7.6 | | | 7.1 | 16 | 133 | 15 |
| Dec/05 | 0.327 | 0.417 | 137 | 2 | 7 | 98.4 | | 131 | 5 | 11 | 96.3 | | 1 | 7.3 | 7.7 | | | 6.9 | 15 | 70 | 19 |

Note: Summer months shaded

| | Effluent Flow | | | CBOD5 | | | Suspended Solids | | | Effluent (mg/l) | | | Fecal Coliform | | | E. coli | | | Overflows | | | |
|-----------------------------|---------------|-------|-----------------|-----------------|-------|-----------|------------------|---------|-----------|-----------------|-------|--------------------------|-----------------|-------|-----------------------|--------------------------|-------|------------|-----------|-----------------|-----------------|-------|
| | (MGD) | | Influent (mg/l) | Effluent (mg/l) | | % Removal | Influent (mg/l) | | % Removal | Effluent (mg/l) | | Settleable Solids (ml/l) | pH (std. units) | | Cl ₂ Daily | Ammonia-Nitrogen Monthly | | D.O. Daily | | Monthly Average | Monthly Average | |
| | Monthly | Daily | | Monthly | Daily | | Monthly | Daily | | Monthly | Daily | | Monthly | Daily | | Monthly | Daily | Monthly | | | | Daily |
| Limits | Average | Max | Report | Average | Max | 85 | Report | Average | Max | 30 | 45 | 85 | Min | Max | 0.025 | Average | Max | Min | Max | 200 | 1000 | 125 |
| Summer | | | | 5 | 10 | | | 30 | 45 | | | | 6.0 | 9.0 | 0.025 | 2 | 4 | 6.0 | | | | |
| Winter | | | | 10 | 20 | | | 30 | 45 | | | | 7.1 | 7.4 | 0.025 | 5 | 10 | 7.4 | | | | |
| Jan/05 | 0.488 | 2.132 | 90 | 3 | 12 | 96.2 | 54 | 8 | 22 | 86 | | 5 | 7.1 | 7.4 | | 4 | 12 | 7.4 | 13 | 245 | 20 | |
| Feb/05 | 0.398 | 0.476 | 77 | 3 | 6 | 96.5 | 41 | 6 | 10 | 85.2 | | 1 | 7.2 | 7.5 | | 2 | 5 | 7.3 | 6 | 30 | 6 | |
| Mar/05 | 0.398 | 0.463 | 82 | 3 | 8 | 95.8 | 59 | 7 | 14 | 87.5 | | 1 | 7.2 | 7.6 | 5 + | 2 | 7 | 7.1 | 9 | 32 | 5 | |
| Apr/05 | 0.452 | 0.574 | 142 | 3 | 7 | 98 | 92 | 5 | 10 | 94.5 | | 1 | 7.1 | 7.4 | | 2 | 4 | 6.8 | 8 | 28 | 10 | |
| May/05 | 0.450 | 0.515 | 117 | 2 | 4 | 98.3 | 70 | 3 | 8 | 95.1 | | 1 | 7.1 | 7.5 | | 1 | 2 | 6.9 | 9 | 185 | 10 | |
| Jun/05 | 0.395 | 0.497 | 117 | 2 | 4 | 98.3 | 85 | 7 | 20 | 92 | | 12 | 7.0 | 7.4 | | 1 | 2 | 6.0 | 12 | 108 | 16 | |
| Jul/05 | 0.369 | 0.496 | 117 | 2 | 3 | 98.6 | 99 | 4 | 13 | 96.3 | | 1 | 7.1 | 7.4 | | 1 | 1 | 6.3 | 22 | 156 | 13 | |
| Aug/05 | 0.400 | 0.566 | 110 | 1 | 2 | 98.9 | 86 | 2 | 5 | 97.5 | | 1 | 7.2 | 7.6 | | 1 | 3 | 6.4 | 15 | 640 | 14 | |
| Sep/05 | 0.392 | 0.521 | 24 | 1 | 3 | 98.8 | 87 | 3 | 10 | 96.4 | | 1 | 7.0 | 7.4 | | 2 | 5 | 6.7 | 24 | 279 | 14 | |
| Oct/05 | 0.411 | 0.505 | 143 | 2 | 5 | 98.5 | 93 | 5 | 11 | 94.8 | | 1 | 7.1 | 7.4 | | 3 | 7 | 7.1 | 15 | 90 | 15 | |
| Nov/05 | 0.435 | 0.606 | 135 | 2 | 4 | 98.5 | 99 | 4 | 8 | 95.7 | | 1 | 7.1 | 7.8 | | 4 | 9 | 7.0 | 12 | 93 | 12 | |
| Dec/05 | 0.418 | 0.525 | 119 | 2 | 5 | 98.1 | 91 | 3 | 6 | 96.5 | | 1 | 7.0 | 7.4 | | 2 | 3 | 7.1 | 8 | 96 | 11 | |
| Jan/06 | 0.494 | 0.607 | 73 | 2 | 9 | 95.9 | 57 | 4 | 8 | 93.4 | | 1 | 7.2 | 7.5 | | 3 | 7 | 6.1 | 9 | 37 | 14 | |
| Feb/06 | 0.409 | 0.459 | 112 | 3 | 8 | 97.7 | 81 | 5 | 21 | 93.6 | | 1 | 7.1 | 7.4 | 05 | 2 | 6 | 7.3 | 23 | 55 | 12 | |
| Mar/06 | 0.413 | 0.551 | 106 | 2 | 4 | 97.7 | 83 | 6 | 11 | 92.4 | | 12 | 7.1 | 7.5 | | 2 | 8 | 6.8 | 23 | 166 | 8 | 1 |
| Apr/06 | 0.443 | 0.527 | 108 | 3 | 13 | 96.8 | 90 | 6 | 15 | 92.8 | | 1 | 7.2 | 7.4 | | 6 | 17 | 7.1 | 43 | 3100 + | 25 | |
| May/06 | 0.419 | 0.600 | 110 | 3 | 6 | 97 | 77 | 7 | 22 | 97.5 | | 1 | 7.2 | 7.4 | | 1 | 3 | 7.0 | 21 | 152 | 11 | |
| Jun/06 | 0.368 | 0.439 | 162 | 2 | 4 | 98.6 | 119 | 4 | 7 | 98.6 | | 1 | 7.1 | 7.5 | | 2 | 4 | 6.0 | 21 | 280 | 9 | |
| Jul/06 | | | | | | | | | | | | | | | | | | | | | | |
| Aug/06 | 0.336 | 0.392 | 168 | 3 | 4 | 98.5 | 128 | 9 | 26 | 92.7 | | 1 | 7.0 | 7.5 | 5 + | 1 | 3 | 6.0 | 157 | 990 | 33 | |
| Sep/06 | 0.374 | 0.466 | 117 | 2 | 3 | 98.5 | 98 | 5 | 11 | 94.9 | | 1 | 6.8 | 7.4 | | 1 | 3 | 6.0 | 24 | 123 | 17 | |
| Oct/06 | | | 111 | 2 | 4 | 98.4 | 97 | 5 | 15 | 94.4 | | 1 | 7.1 | 7.7 | | 2 | 4 | 6.7 | 23 | 315 | 15 | |
| Nov/06 | | | 105 | 2 | 4 | 97.8 | 75 | 10 | 23 | 87 | | 1 | 7.2 | 7.5 | | 1 | 1 | 7.3 | 22 | 216 | 25 | |
| Dec/06 | 0.485 | | 132 | 2 | 4 | 98.2 | 79 | 6 | 10 | 92.8 | | 1 | 7.2 | 7.6 | | 1 | 3 | 7.1 | 21 | 278 | 16 | |
| Jan/07 | 0.525 | 1.520 | 81 | 3 | 5 | 96.5 | 80 | 6 | 13 | 89.4 | | 1 | 7.2 | 7.6 | | 1 | 1 | 7.8 | 141 | 241 | 14 | |
| Feb/07 | 0.545 | 1.514 | 75 | 3 | 5 | 96.5 | 75 | 6 | 13 | 89.4 | | 1 | 7.1 | 7.5 | | 1 | 3 | 6.8 | 15 | 79 | 37 | |
| Mar/07 | 0.553 | 0.958 | 97 | 4 | 10 | 96.3 | 106 | 8 | 13 | 92.3 | | 1 | 7.1 | 7.7 | | 2 | 8 | 6.8 | 21 | 50 | 25 | |
| Apr/07 | | | 77 | 2 | 3 | 97 | 51 | 7 | 15 | 85.8 | | 1 | 7.0 | 7.6 | | 1 | 13 | 6.6 | 25 | 99 | 33 | |
| May/07 | | | | | | | | | | | | | | | | | | | | | | |
| Jun/07 | 0.404 | 0.450 | 98 | 2 | 5 | 98 | 71 | 5 | 15 | 92.9 | | 1 | 7.1 | 7.4 | | 5 | 1.8 | 6.8 | 23 | 100 | 29 | |
| Jul/07 | 0.304 | 0.444 | 120 | 1 | 3 | 98.8 | 75 | 3 | 7 | 95.4 | | 1 | 7.0 | 7.5 | 25 + | 1 | 2 | 6.3 | 45 | 253 | 105 | |
| Aug/07 | 0.260 | 0.419 | 170 | 2 | 3 | 98.8 | 97 | 5 | 10 | 95 | | 1 | 6.9 | 7.8 | 25 + | 1 | 4 | 6.0 | 58 | 177 | 34 | |
| Sep/07 | 0.373 | 0.373 | 126 | 3 | 10 | 91 | 103 | 5 | 16 | 94.8 | | 1 | 6.9 | 7.5 | 25 + | 2 | 8 | 6.2 | 43 | 4 | 31 | |
| Oct/07 | 0.400 | 0.553 | 127 | 4 | 7 | 96.8 | 82 | 10 | 24 | 88 | | 1 | 6.8 | 7.5 | | 2 | 5 | 6.5 | 52 | 400 | 37 | 1 |
| Nov/07 | 0.434 | 0.482 | 97 | 3 | 4 | 97.1 | 86 | 7 | 12 | 91.5 | | 1 | 7.2 | 7.5 | | 1 | 3 | 7.1 | 21 | 150 | 12 | |
| Dec/07 | 0.564 | 1.574 | 83 | 3 | 5 | 96.7 | 65 | 7 | 11 | 89.1 | | 1 | 7.2 | 7.6 | | 3 | 1 | 7.1 | 20 | 52 | 23 | |
| Jan/08 | 0.513 | 0.681 | 81 | 3 | 8 | 96.9 | 64 | 10 | 35 | 85 | | 1 | 7.0 | 7.6 | 025 | 1 | 3 | 8.0 | 9 | 34 | 13 | |
| Feb/08 | 0.452 | 0.645 | 118 | 2 | 4 | 98.3 | 58 | 6 | 22 | 88.8 | | 1 | 7.0 | 7.5 | | 1 | 2 | 7.0 | 7 | 70 | 7 | |
| Mar/08 | 0.502 | 0.641 | 103 | 2 | 3 | 97.9 | 63 | 6 | 10 | 91.3 | | 1 | 7.0 | 7.7 | 05 + | 2 | 3 | 7.6 | 8 | 50 | 11 | |
| Apr/08 | 0.531 | 0.606 | 67 | 2 | 3 | 96.7 | 45 | 6 | 9 | 86.8 | | 1 | 7.0 | 7.5 | 1 + | 1 | 2 | 7.2 | 26 | 300 | 21 | |
| May/08 | 0.485 | 0.725 | 75 | 2 | 3.5 | 97 | 49 | 5 | 10 | 90.2 | | 5 | 7.3 | 8.2 | 03 | 2 | 5 | 6.6 | 8 | 40 | 7 | |
| Jun/08 | 0.427 | 0.502 | 93 | 1 | 2 | 98.6 | 66 | 2 | 4 | 97.4 | | 1 | 7.3 | 7.5 | 03 | 1 | 5 | 7.2 | 18 | 50 | 13 | |
| Jul/08 | 0.456 | 0.648 | 91 | 2 | 4.9 | 97.4 | 69 | 10 | 20 | 85.8 | | 9 | 7.1 | 7.5 | 06 + | 3 | 1 | 6.9 | 32 | 120 | 27 | |
| Period: Jan 2002 - Jul 2009 | | | | | | | | | | | | | | | | | | | | | | |
| Average | 0.402 | 0.562 | 114 | 3 | 9 | 96.6 | 85 | 8 | 32 | 89.6 | | 2 | 7.1 | 7.6 | 006 | 0.4 | 1.0 | 6.7 | 28 | 245 | 20 | 0 |
| Maximum | 0.564 | 2.132 | 284 | 12 | 72 | 99.1 | 239 | 47 | 384 | 97.9 | | 100 | 7.3 | 8.4 | 0.50 | 2.0 | 5.1 | 9.1 | 157 | 3100 | 105 | 0 |
| Minimum | 0.226 | 0.321 | 24 | 1 | 2 | 74.0 | 0 | 2 | 4 | 29.5 | | 0.1 | 6.7 | 7.1 | 0.00 | 0.0 | 0.1 | 6.0 | 6 | 4 | 5 | 0 |
| + = Exceedance | | | | | | | | | | | | | | | | | | | | | | |
| note: Summer months shaded | | | | | | | | | | | | | | | | | | | | | | |

Note: Summer months shaded

**Figure 3-1. Probability Plot - Treated Effluent Monthly Average Total Nitrogen
 (Outfall 001 Data - Lynwood Utility Corp. STP TN0029718)**

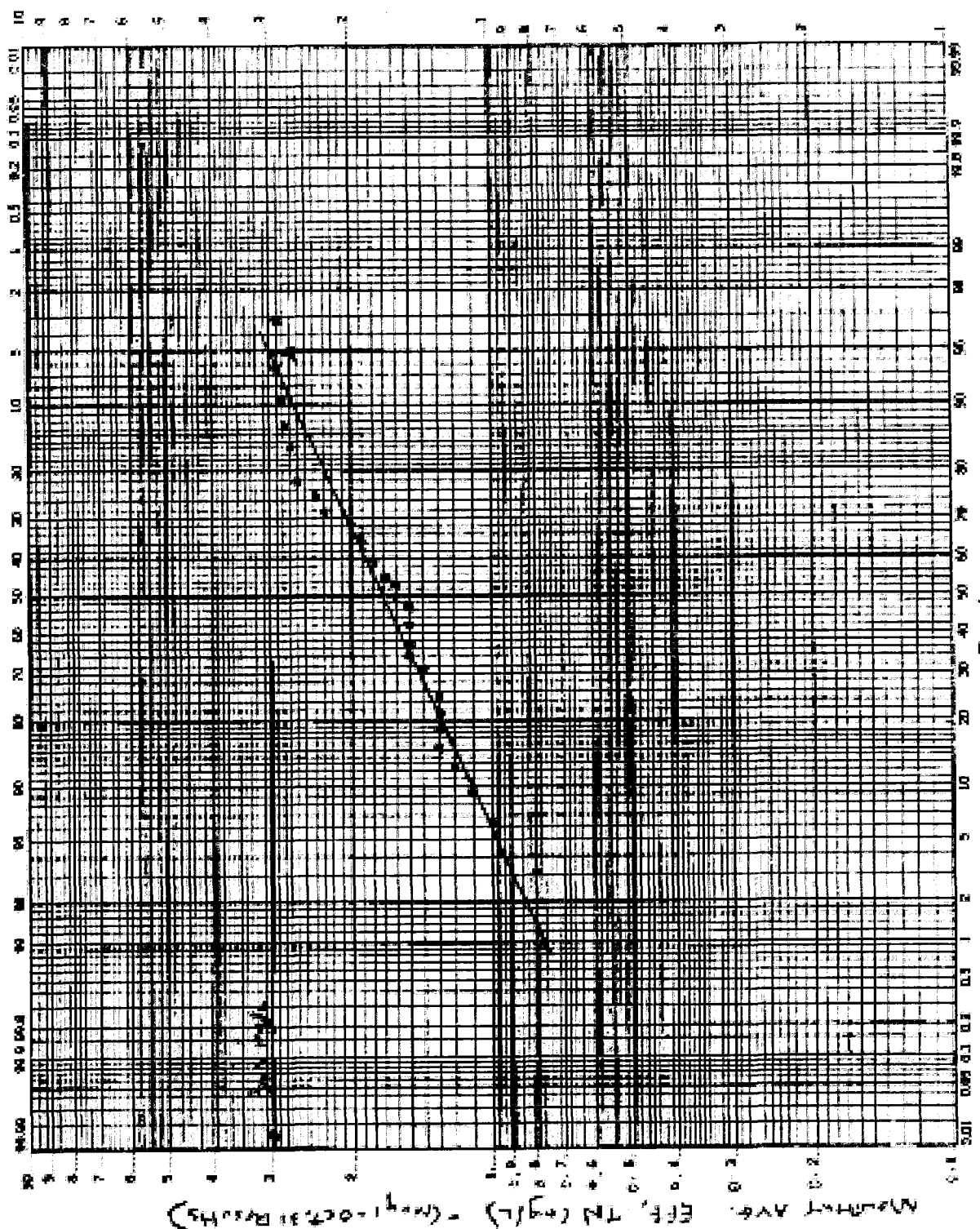
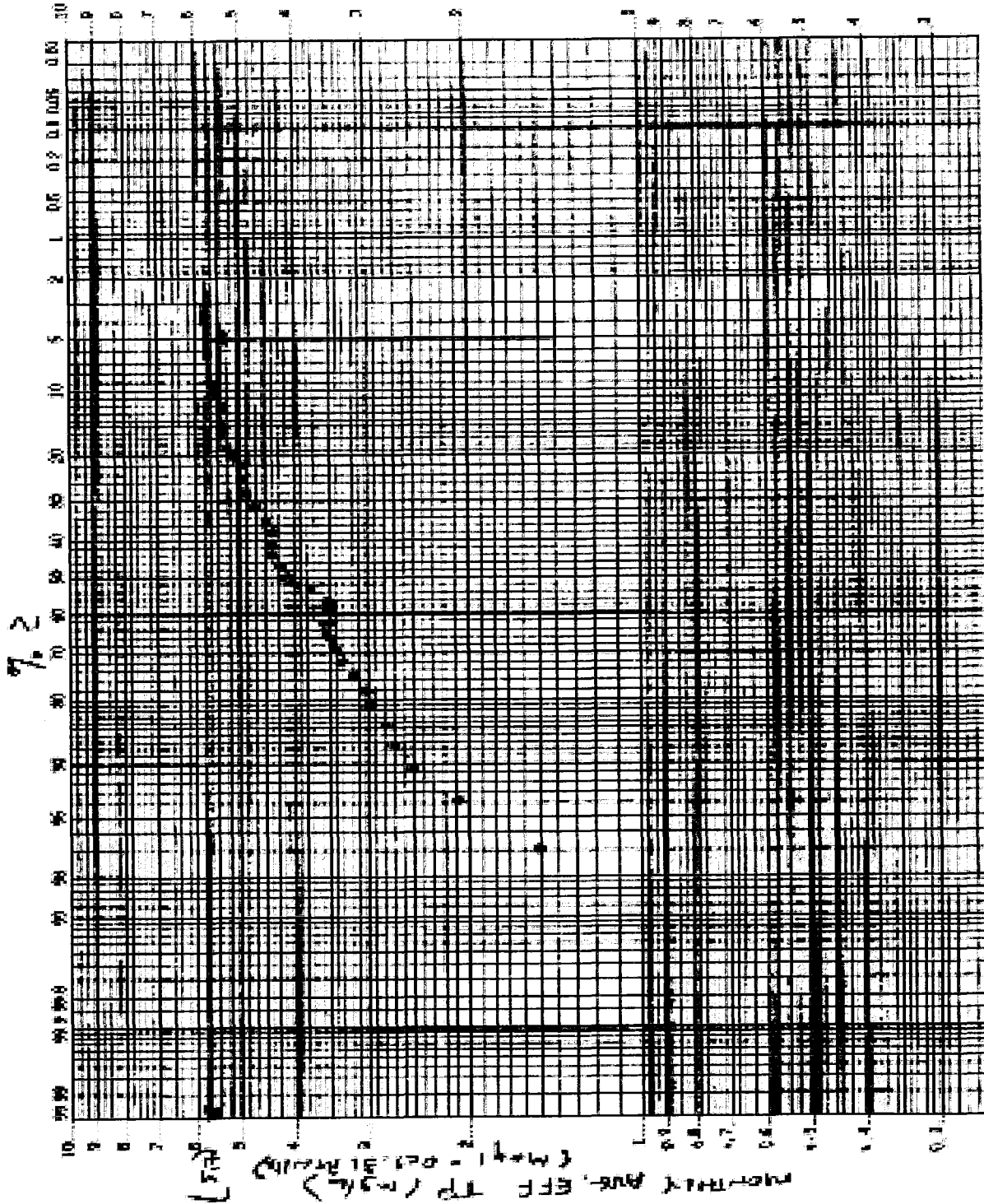


Figure 3-2. Probability Plot - Treated Effluent Monthly Average Total Phosphorus
 (Outfall 001 Data - Lynwood Utility Corp. STP TN0029718)



APPENDIX 4 AMMONIA NITROGEN AQUATIC TOXICITY CALCULATIONS

| Ammonia Nitrogen Aquatic Toxicity Calculations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------|------|-----------------------------------------------|----------------------|------|------|--|--|---------------------|--------------------------------------|-----|--------------------------------------------------|------|------------------------|--|--|--|------------|-----------------------|--|--|------------|----------------------|--|--|-----|-----------------|--|---------------------|-----|-----------------|--|--|-----------------------------------------------|------|------|------|-----------------------------------------------|------|------|------|
| <p>The State utilizes the EPA document, 1999 Update to Ambient Water Quality Criteria for Ammonia and assumed temperatures of 25°C and 15°C and stream pH of 8 to derive an allowable instream protection value. A mass balance with plant and stream flows and this allowable value determines the monthly average permit limit. Seasonal limits may also be allowed due to ambient temperature variations between the summer and winter seasons.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>A pH value of 8 was used for the evaluation because under low-flow receiving stream conditions it is effluent dominated (Outfall 001 discharge from the upstream Franklin STP TN0028827 discharge which is typically at approximately pH = 8 s.u.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="0"> <tr> <td>East TN- 25°C, 15°C</td> <td colspan="9"></td> </tr> <tr> <td>Middle TN- 27°C, 17°C</td> <td colspan="9"></td> </tr> <tr> <td>West TN- 30°C, 20°C</td> <td colspan="9"></td> </tr> </table> | | | | | | | | | | East TN- 25°C, 15°C | | | | | | | | | | Middle TN- 27°C, 17°C | | | | | | | | | | West TN- 30°C, 20°C | | | | | | | | | | | | |
| East TN- 25°C, 15°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Middle TN- 27°C, 17°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| West TN- 30°C, 20°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="0"> <tr> <td></td> <td colspan="3">Winter</td> <td></td> <td colspan="3">Summer</td> <td></td> </tr> <tr> <td>Temp (°C)=</td> <td>17</td> <td></td> <td></td> <td>Temp (°C)=</td> <td>27</td> <td></td> <td></td> </tr> <tr> <td>pH=</td> <td>8.0</td> <td></td> <td></td> <td>pH=</td> <td>8.0</td> <td></td> <td></td> </tr> <tr> <td>Min (2.85, 1.45*10⁴ 0.028*(25-T))</td> <td>2.43</td> <td>2.85</td> <td>2.43</td> <td>Min (2.85, 1.45*10⁴ 0.028*(25-T))</td> <td>1.27</td> <td>2.85</td> <td>1.27</td> </tr> </table> | | | | | | | | | | | Winter | | | | Summer | | | | Temp (°C)= | 17 | | | Temp (°C)= | 27 | | | pH= | 8.0 | | | pH= | 8.0 | | | Min (2.85, 1.45*10 ⁴ 0.028*(25-T)) | 2.43 | 2.85 | 2.43 | Min (2.85, 1.45*10 ⁴ 0.028*(25-T)) | 1.27 | 2.85 | 1.27 |
| | Winter | | | | Summer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temp (°C)= | 17 | | | Temp (°C)= | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH= | 8.0 | | | pH= | 8.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Min (2.85, 1.45*10 ⁴ 0.028*(25-T)) | 2.43 | 2.85 | 2.43 | Min (2.85, 1.45*10 ⁴ 0.028*(25-T)) | 1.27 | 2.85 | 1.27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div style="border: 1px solid black; padding: 5px;"> $CCC = \left(\frac{0.0577}{1+10^{(7.688-pH)}} + \frac{2.487}{1+10^{(pH-7.688)}} \right) * \text{Min} (2.85, 1.45*10^4 0.028*(25-T))$ </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="0"> <tr> <td>CCC=</td> <td>2.07</td> <td></td> <td></td> <td>CCC=</td> <td>1.09</td> <td></td> <td></td> </tr> </table> | | | | | | | | | | CCC= | 2.07 | | | CCC= | 1.09 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC= | 2.07 | | | CCC= | 1.09 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>CCC - Continuous Chronic Criterion Allowable instream NH₃-N concentration [mg/l]</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div style="border: 1px solid black; padding: 5px;"> $CCC = \frac{(\text{Critical Low Flow [MGD]} * \text{Background Ammonia Nitrogen [mg/L]} + (\text{Discharge Flow [MGD]} * \text{Effluent Concentration [mg/L]})}{(\text{Critical Low Flow [MGD]} + (\text{Discharge Flow [MGD]})}$ </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>where:</p> <table border="0"> <tr> <td>2.86</td> <td>Critical Low Flow [MGD] (7Q10 value)</td> </tr> <tr> <td>0.1</td> <td>Background Ammonia Nitrogen Concentration [mg/L]</td> </tr> <tr> <td>0.25</td> <td>Outfall 001 Flow [MGD]</td> </tr> </table> | | | | | | | | | | 2.86 | Critical Low Flow [MGD] (7Q10 value) | 0.1 | Background Ammonia Nitrogen Concentration [mg/L] | 0.25 | Outfall 001 Flow [MGD] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.86 | Critical Low Flow [MGD] (7Q10 value) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.1 | Background Ammonia Nitrogen Concentration [mg/L] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.25 | Outfall 001 Flow [MGD] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Treated effluent NH₃-N discharge concentrations and loadings for summer winter and summer conditions follow:</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="0"> <tr> <td></td> <td colspan="3">Winter</td> <td></td> <td colspan="3">Summer</td> <td></td> </tr> <tr> <td></td> <td>Concentration [mg/L]</td> <td></td> <td></td> <td></td> <td>Concentration [mg/L]</td> <td></td> <td></td> </tr> <tr> <td>51</td> <td>Amount [lb/day]</td> <td></td> <td></td> <td>26</td> <td>Amount [lb/day]</td> <td></td> <td></td> </tr> </table> | | | | | | | | | | | Winter | | | | Summer | | | | | Concentration [mg/L] | | | | Concentration [mg/L] | | | 51 | Amount [lb/day] | | | 26 | Amount [lb/day] | | | | | | | | | | |
| | Winter | | | | Summer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Concentration [mg/L] | | | | Concentration [mg/L] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51 | Amount [lb/day] | | | 26 | Amount [lb/day] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Because the current permit's NH₃-N concentration limits 2.0 mg/L monthly average for summer conditions (determined to protect dissolved oxygen) is more stringent than the aquatic toxicity limit calculated above, the current limit will be retained for the new permit. (Note that the above winter calculation is based on the summer low-flow and therefore, not representative of a 7Q10 cold weather flow value.)

APPENDIX 5
NUTRIENT MANAGEMENT PLAN (NMP)/REPORTING

The new permit requires the permittee to develop and implement a Nutrient Management Plan (NMP) with reporting, pursuant to the criteria presented in the new permit's Attachment 1. The NMP requires the permittee to conduct evaluations and implement effective methods for modifying its treatment facilities operations to maximize the removal of wastewater nutrients, and add supplementary treatment units to achieve the Outfall 001 discharge total nitrogen and total phosphorus limits after 18 months from the permit's effective date.

PUBLIC HEARING – NOTICE OF DETERMINATION

Cartwright Creek - Grasslands STP

NPDES PERMIT No. TN0027278

Permit Writer: Gary Davis

This section presents the division's Notice of Determination (NOD) for the August 31, 2010 public hearing regarding National Pollutant Discharge Elimination System (NPDES) permit renewals for Franklin STP (TN0028827), Lynwood Utility Corp. STP (TN0029718), and Cartwright Creek, LLC – Grassland STP (TN0027278). This NOD is based on comments provided verbally during the public hearing (with brief summary/division paraphrasing-clarifications included below), and those written and provided to the division within the 10 day period. The division's responses to these comments are provided below in **bold/italic** font. Results from this NOD, the draft permit's Rationale, and the Addendum to Rationale provided the basis for finalizing the proposed permit. Note for this NOD, the Lynwood Utility Corp. STP (TN0029718) will be called "Lynwood STP" and Cartwright Creek, LLC – Grassland STP (TN0027278) is designated "Cartwright Creek STP".

Public Hearing Verbal Comments

The division considers that its responses to the public hearing verbal comments have been addressed in the relevant permits' "Addendum to Rationale"

Harpeth River Watershed Association (Mr. Michael Cain and Ms. Dorie Bolze)

Michael Cain (Watershed Assistant and Restoration Manager)

Mr. Cain participated in four receiving stream dissolved oxygen investigations conducted during 2006 – 2008. They think a low dissolved oxygen point upstream of the Franklin STP is associated with Egyptian lacquer seeps. Dissolved oxygen upstream of the Franklin STP is low during the summer. Assumptions in the (EPA TMDL) model are inaccurate, resulting in the actual instream dissolved oxygen being less than that was assumed for the modeling; which has resulted in overestimating the receiving stream's assimilative capacity.

The dissolved oxygen problem from Eagleville (upstream) is due to septic tanks and farmer issues, which are fixable. Even if fixed, the three STPs will continue to stress the river so they need more stringent discharge limits, and they all need the same set of limits. There needs to be a single value (e.g., dissolved oxygen allowance) shared among the permittees. Use same discharge limits for the three STPs and split for the three dischargers.

EPA's TMDL models did not adjust for algae. Because of headwater impacts from waste/agricultural stormwater runoff, huge instream dissolved oxygen swings are seen and the model did not account for these impacts. As such, the three STPs permits (which were based on TMDL) did not address the low upstream dissolved oxygen concentrations. Continuous instream dissolved oxygen monitoring data are needed. Suggest four continuous monitoring stations (upstream of Franklin STP at Highway 96 (re: upstream of three STPs), Franklin Recreation Complex (re: downstream of Franklin STP), between Lynwood Utility Corp. STP and Cartwright Creek, LLC – Grassland STP (re: local impact from Lynwood Utility Corp. STP) and

Highway 100 (re: downstream of three STPs). Data should be put in public viewable website and the results can be used for revising the model.

Ms. Dorie Bolze (Director)

A large amount of instream dissolved oxygen data has been collected which demonstrates the need for continuous monitoring. Kansas has instream dissolved oxygen data online, so does the USGS, which allows the public to see real time what's going on in the river. For January through April lots of receiving stream flow. The dissolved oxygen problem is associated with the low-flow summer conditions. They understand that steps are being taken for the wastewater from the local failing septic tanks subdivisions to be pumped to the Franklin STP for treatment. The state's instream dissolved oxygen water quality standard is 5.0 mg/L, and low dissolved oxygen problems exist, mostly in mornings before sunrise. Graph shows river daily dissolved oxygen dips below 5 mg/L. River dissolved oxygen is different in winter when flow much higher. In summer the receiving stream has a problem assimilating treated wastewater. The three STPs are represented here tonight, and the Franklin STP has invested lots of effort in the last 10 years. Suggest that Lynwood STP and Cartwright Creek STP should be part of the integrated water management plan discussions.

STPs loadings needs to be determined and cost-effective ways of making improvements are needed. EPA's TMDL and safety factors warrant additional consideration e.g., due to organics in Liberty Creek (Elmco/Egyptian Lacquer sources). Pollutants create an oxygen demand in the river. The safety factor does not leave much for the three STPs. HRWA has worked on this and their work has shown that at times the river has only half as much capacity as the EPA TMDL model predicts. Maybe overstates receiving stream's capacity by 2 or 3 times. The BOD5 loadings discharged is still too large. Franklin STP gets more discharge allocation (lb/day) because of its larger size. The other STPs have more stringent limits than the Franklin STP. HRWA's written comments for the draft permits are on their website. The draft permits need to avoid antibacksliding pursuant to state's rules. Currently, Franklin STP's treated effluent is about 6 mgd of which approximate 3 mgd during summers goes to golf courses for watering. There is still time to make changes because the Franklin STP plant is not at its 12 mgd design flow yet. River in summer is quite small. Franklin STP's discharge is largest on the river. In the summer, the Harpeth River can get to ½ mgd flow. The receiving stream would be swamped if the Franklin STP were not doing reuse. The receiving stream is 50% treated effluent, at times. We don't want to paddle in 90% treated effluent. Ultimately, we have to meet the water quality standard in the Harpeth River. Because of the nature of the river and algae blooms, the effects move downstream to Cheatham County impacting the scenic portion of the Harpeth River, including the Harpeth River State Park.

Franklin and Williamson County have stringent stormwater regulations, but no one has done anything specific to address non-point source loads. The Beaver Creek wastewater treatment facility in East Tennessee has also focused on controls for non-point sources. This is the type of thing the integrated management plan will address, but they are not supposed to discharge into a stream that is already impacted. I appreciate what everyone is doing and want to remind everyone that this river does not meet water quality standards in summer. HRWA is thrilled that leadership provided by Franklin STP, but need the permits to make it happen. The permits need to be tighter than what is in the TMDL. Need to focus on dissolved oxygen under summer conditions. The division needs to force the issue and deadlines are required.

Tennessee Clean Water Network (Ms. Stephanie Matheny, Esq.)

Thanks to the division for having public hearing and processing the three permits simultaneously. However, thinks draft permits do not go far enough to protect water quality and will violate water quality criteria. Water quality act notes that waters are held in trust and users have right to unpolluted waters. Every permit shall include most stringent limits required to maintain standards.

Narrative standards are needed to require actions for maintaining water quality standards. Law says permits not in compliance with water quality standards will not be allowed. These conditions are included in construction stormwater permit, but division repeatedly declines to put these conditions in STP permits.

Need to reduce CBOD5, total nitrogen and total phosphorus to $\frac{1}{2}$ to $\frac{1}{3}$ of that in drafts. TCWN submitted written comments for the three draft permit. TDEC should start over and issue more stringent permit limits which are protective of water quality standards.

Cartwright Creek, LLC – Grasslands STP (Mr. Bruce Meyer – Operations Manager)

The STP serves 530 customers. Our major technical concern is meeting nitrogen standard; cannot meet limits now and will have to make upgrades. Have an interest in reusing our treated effluent on the Old Natchez golf course during summers. This would result in up to 0.25 mgd reuse during summers.

Whatever choice taken, funded will be by rate structure to customers. Provided math example. Actions are limited, since they are regulated by Tennessee Regulatory Authority (TRA). Once we define the monetary requirements, we won't be able to get a loan in this climate. Requesting help through county and state agencies in helping get a loan, not a grant or free money. Need a low interest loan. Noted rate case, use an open book approach and trying their best to upgrade the facility, and love the concept of reuse. Intent was to reuse originally, but the golf course approach fell through. Franklin STP has done a tremendous job. We liked reuse before reuse was cool. We can if we get finances in order. We need \$100,000 just to get TRA approval baseline studies for collection/do studies on a solution. Trying to upgrade WWTP

9th District, Grassman Commissioner (Ms. Mary Brockman)

As a property owner along Harpeth River on old Hillsboro road, a fan of watershed association, and a commissioner for the Grassland area, have concerns regarding more scrutiny on the two smaller utilities. Cartwright Creek STP is aging plant needing considerable upgrades. Grassland area depends on that treatment system. Now doing a comprehensive plan and area of study, coming back up is grassland as a major concern. Don't think it can be business as usual. It seems that with permitting we're getting the cart before the horse – have issues. Some neighborhoods have gone (450 homes) from Lynwood STP to Franklin STP. It is a good thing. Was harming the Harpeth River, almost public health issue. Going to the Franklin River was the right decision. Lynwood STP's reserved capacity for those homes, what will happen to that capacity – will it go for new homes? Another point to be made are landslides in vicinity of her farm from top of bank all the way down into the river, e.g., hundreds of trees/land, looking at fixes through a grant and forestry. This flooding has resulted in changes to the river – tremendous changes to the banks of the river – losing stabilized banks – lost stabilizing vegetation – don't know how this might affect the permits. There is demand for this river and we

need to put heads together with regards to Lynwood STP and Cartwright Creek STP. Applaud Cartwright Creek STP wanting to reuse. Cost required for upgrades, but is there another answer.

Franklin STP TN0028827 - Public Hearing Written Comments

Gary Davis - Franklin STP - Draft Permit/Public Hearing Comments

From: Mark Hilty <mark.hilty@franklintn.gov>
To: "gary.davis@tn.gov" <gary.davis@tn.gov>
Date: 9/10/2010 4:26 PM
Subject: Franklin STP - Draft Permit/Public Hearing Comments
CC: Vic Bates <vicb@franklintn.gov>, Wayne Davenport <wayned@franklintn.gov>, Bo Butler <bbutler@ssr-inc.com>, David Parker <Davidp@franklintn.gov>, Russell Truell <russelltr@franklintn.gov>, Eric Stuckey <eric.stuckey@franklintn.gov>
Attachments: Franklin_NPDES_Response_091130.pdf

Mr. Davis,

The City of Franklin Water Management Department would like to offer the following comments regarding the draft NPDES permit and public hearing conducted on August 31, 2010 at 6:00 PM CDT at the Williamson County Parks and Recreation Department, Franklin Recreation Complex.

The Franklin STP has been cited as a major factor in the DO concerns in the Harpeth River. While data presented by the Harpeth River Watershed Organization during the hearing indicates that the DO concentrations downstream of the City's STP are far greater than that of the upstream reaches, the Franklin STP is still concerned about the quality of data collected.

The analysis for DO is a very important test in waste treatment process and water pollution. The two approved methods described in Standard Methods 20th Edition are the Winkler or iodometric method and its modifications and the electronic method using membrane electrodes. The effect of interferences should be considered when selecting a method.

Using the Winkler method with samples containing organic matter can cause negative errors because organic matter is oxidized when the oxidized manganese precipitate is acidified. "Various modifications of the iodometric method have been developed to eliminate or minimize effects of interferences ; nevertheless, the method is inapplicable to a variety of industrial and domestic wastewaters. Moreover, the iodometric method is not suited for field testing and cannot be adapted easily for continuous monitoring or for DO determination in situ." (SM 4500-O G).

These problems are minimized when membrane covered systems are used because an oxygen-permeable membrane serves as a diffusion barrier against impurities. Additionally, membrane electrodes are suited for DO monitoring in situ because they are submersible and can be used in lakes, stream surveys, industrial effluents, activated sludge units and estuarine and oceanographic studies. The portability and ease of operation is convenient for field applications also. "Membrane electrodes provide an excellent method for DO analysis in polluted waters, highly colored waters and strong waste effluents. They are recommended for use especially under conditions that are unfavorable for use of the iodometric method or when that test and its modifications are subject to serious errors caused by interferences." (SM 4500-O G).

Sampling methods are also of prime importance. In a stream for instance, DO measurements should be taken at mid-stream and mid-depth, not on the periphery or in pooled water with no flow.

Uniformity in DO analysis testing methods and sampling methods should be adhered to by all individuals involved in a DO study for meaningful and accurate data comparison. In this vein, the City of Franklin would like to review methods, applicable bench sheets, and the Quality Control program used for the data collected by HRWA that is subsequently being used to help determine the draft permit limits.

The City of Franklin would like to also reiterate the comments provided in November 2009 (attached). We believe that the comments submitted are substantial enough for issuance of a revised draft permit.

The City of Franklin is committed to operating and maintaining our treatment facilities to meet all of the requirements of our permit and protecting the water quality of the Harpeth River. We recognize the value of the river and all water resources to our City. We look forward to working with the Division to reach an agreement on permit limits based on protecting the water quality of this important resource.

Thank you for the opportunity to present this information. Sincerely,

Mark S. Hilty
Director
City of Franklin
Water Management Department

405 Hillsboro Road
Franklin, Tennessee 37064
Phone: 615.794.4554
Fax: 615.790.1340

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Division's Response For Franklin's STP Public Hearing Written Comments

The division acknowledges the potential dissolved oxygen monitoring problems/interferences with some historical instream data. The permittee can further investigate shortcomings of the database. The permittee's draft permit comments were addressed in the Addendum to Rationale, and considered for finalizing the permit.

Lynwood Utility Corp. STP TN0029718 - Public Hearing Written Comments

G.A.M. Engineering, Inc.

CIVIL ENGINEERING

P.O. Box 303 Phone/Fax: 615-885-6278 Hermitage, TN 37076-0303

September 7, 2010

Mr. Vojin Janjic, Manager Permit Section
Tennessee Department of Environment & Conservation
Division of Water Pollution Control
6th Floor - L&C Annex
401 Church Street
Nashville, TN. 37243-1534

RE: Lynwood STP Public Hearing
August 31, 2010
GAM Project No. 10-080

RECEIVED

SEP 08 2010

Permit Section

Dear Mr. Janjic,

During the public hearing on Lynwood Utility Corporation's draft permit, a public comment was made that the 0.125 MGD reserve capacity in Lynwood's existing permit should remain in the new NPDES permit. Lynwood strongly disagrees.

This 0.125 MGD reserve capacity is included and is part of Lynwood's total 0.40 MGD permitted treatment capacity. The sewer plant's last expansion was designed to treat an average daily sewage flow of 0.40 MGD. The sole purpose for which this 0.125 MGD capacity was reserved no longer exists. When Lynwood's existing permit was issued, TDEC required that 0.125 MGD of Lynwood's capacity be reserved for the Meadowgreen, Green Acres and Farmington Subdivisions (the Subdivisions). This 0.125 MGD capacity was reserved to allow Lynwood, Williamson County and the Subdivisions to make a good faith attempt to negotiate an agreement for Lynwood to provide sewer service to the Subdivisions. If no agreement could be reached, TDEC granted Lynwood the right to request a release of this reserved capacity.

After the existing permit was issued, Lynwood performed an engineering study and prepared a report which was submitted to TDEC and Williamson County which described how these three Subdivisions could be provided sewer service. The study described the alternatives of the installation of a gravity sewer system or of a pressurized grinder pump/forcemain type system and the estimated costs for each alternative. After receiving this engineering study and report, Williamson County decided to hire an engineering firm to do another study to determine how to provide sewer service to the Subdivisions. After Williamson County completed its study, the County began negotiations with Lynwood about treating the waste water from the Subdivisions provided the County and the

Mr. Vojin Janjic, Manager Permit Section
September 7, 2010
Page 2 of 2

homeowners in the Subdivisions financed the collection system to transport the sewer to Lynwood for treatment. These negotiations began in earnest in the spring of 2005. Lynwood representatives had several meetings and conversations with the Williamson County Mayor, the County engineering firm and the County's attorney on this project to negotiate an agreement which would make it economically feasible for Lynwood to provide sewer service to the residents of these Subdivisions. These meetings included discussions about the County's construction of the collection system, Lynwood's costs to provide treatment for the additional flow and Lynwood's takeover of the collection system and included negotiations on the specific terms of an agreement. The County's engineer submitted plans for the construction of the collection system for review by Lynwood. These negotiations continued until the spring of 2009.

After Williamson County began negotiations with Lynwood to provide sewer service to the Subdivisions, Williamson County began having simultaneous negotiations with the City of Franklin about providing sewer service to the Subdivisions. Ultimately, the County entered into an agreement with the City of Franklin to provide sewer service to these Subdivisions. I have enclosed a copy of the Agreement between Williamson County and the City of Franklin dated April 9, 2009, setting for the terms and conditions under which the City of Franklin will provide sewer service to the residents of the Meadowgreen, Hillsboro Acres, Brownwood and Farmington Subdivisions. The collection system to serve these Subdivisions is currently under construction.

The purpose of reserving 0.125 MGD in Lynwood's permit was to allow the Subdivisions the opportunity to use this capacity to treat their sewer because of failing septic systems in these Subdivisions. The residents of these Subdivisions no longer need this reserved capacity since the City of Franklin has agreed to treat their waste water. Therefore, the purpose for reserving this capacity in the Lynwood treatment plant no longer exists. Lynwood has complied with the conditions for the release of this 0.125 MGD in its existing permit.

Lynwood respectfully requests that the requirement that it reserve 0.125 MGD of its capacity be removed from its proposed NPDES permit. The release of this reserved capacity will permit Lynwood to use this capacity to serve future growth within its service area. The release of this reserved capacity will not adversely affect the daily operation of the Lynwood plant since it has been designed and constructed to treat an average daily flow of 0.40 MGD. Continuing the 0.125 MGD reserved capacity in the proposed permit is not in the public interest. The release of this capacity will permit future homes in Lynwood's service area to have sewer service which will give Lynwood the opportunity to improve its financial condition increasing its ability to make improvements to its plant and collection system to produce quality treated effluent entering the Harpeth River.

If you have any questions or need additional information please feel free to contact me.

Sincerely,
G.A.M. Engineering, Inc.


Gregg M. Clingerman, P.E.

Cc: Tyler Ring, Don Scholes

RECEIVED

SEP 08 2010

Permit Section

Note:

Attachment – April 9, 2009 Agreement Available in Division's Permit File

Division's Response For Lynwood Utility Corp. STP Public Hearing Written Comments

The division no longer considers the permittee's reserve capacity to be relevant because of its change to a not-for-profit corporation without TRA oversight, and permit finalization elements warranted. The Lynwood Utility Corp. STP's name change occurred from the division's standpoint per a July 29, 2010 letter from Tyler Ring (President) to the division, announcing its name as Berry's Chapel Utility, Inc. The finalized permit for the previously named "Lynwood Utility Corp. STP" is now "Berry's Chapel Utility STP", with the same NPDES permit number TN0029718.

Cartwright Creek, LLC – Grassland STP TN0027278 - Public Hearing Written Comments

From: "Bruce E. Meyer" <bmeyer@sheafferinternational.com>
To: Gary Davis <Gary.Davis@tn.gov>
CC: Delmar Reed <dreed@sheafferinternational.com>, "Robert I. Cochrane" <rco...
Date: 9/10/2010 4:46 PM
Subject: Cartwright Creek's draft NPDES Comment

Gary,

As a follow-up comment to the public hearing testimony last week: The reuse of Cartwright Creek's effluent at the golf course could result in a substantial reduction of effluent volume and nutrients to the Harpeth River during summer months. Please consider reviewing and adjusting the concentration limits for total nitrogen, ammonia, and phosphorus to reflect the reduction in total mass loading in the event treated effluent is used on the golf course.

Please contact me if you have any questions.

Thank you,

Bruce Meyer
Sheaffer Wastewater Solutions, LLC
Manager of Cartwright Creek, LLC

1551 Thompsons Station Road West
P.O. Box 147
Thompsons Station, TN 37179

Office: 615-261-8600
Mobile: 615-714-7868
bmeyer@sheafferinternational.com<mailto:bmeyer@sheafferinternational.com>
<mailto:bmeyer@sheafferinternational.com>

Division's Response For Cartwright Creek, LLC - Grassland STP Public Hearing Written Comments

As shown in the Addendum to Rationale, the division has included alternative summer monthly average total nitrogen and total phosphorus concentration limits based on reuse via the golf course. Due to antibacksliding provisions, no reuse adjustment was included for ammonia-nitrogen.

HRWA - Public Hearing Written Comments



**HARPETH RIVER
WATERSHED ASSOCIATION**

September 10, 2010

Mr. Gary Davis
Tennessee Dept. of Environment and Conservation
Div. of Water Pollution Control
6th Floor, L&C Annex
401 Church St.
Nashville, TN 37243

Re: NPDES permits:
Franklin STP TN0028827
Lynwood Utilities STP TN0029718
Cartwright Creek LLC STP TN0027278

Mr. Davis,

I am submitting comments to the above proposed permits that are in addition to those submitted in December 2009 on behalf of the Harpeth River Watershed Association. The attached graphs of dissolved oxygen from several studies conducted by HRWA and TDEC indicate that the Harpeth River is not meeting state standards for dissolved oxygen during the summer months. While there are non-point source contributions to this problem, especially in the headwaters near Eagleville, the addition of sewer effluent at the limits of the draft permits amounts to further degradation and contributes substantially to the failure of the receiving water to meet state standards for dissolved oxygen downstream of Franklin, a direct violation of the Clean Water act and the Tennessee Water Quality Control Act.

In accordance with the CWA "anti-backsliding rule," all three permits need to have the same limit set for each parameter based on the tightest of either the EPA's TMDL, the most stringent limit among the three permits currently in place, or what each permittee is currently achieving. In addition, the permits for all three STPs should be bubbled together into a watershed based permit. All three plants are within relatively close proximity to each other with little additional watershed flow input during the summer low flow season. From a regulatory standpoint, it would make sense to bundle them into one overall permit with the one overall load for each pollutant allocated fairly among them, perhaps based on flow discharge.

All three permittees as a group should be required to monitor the river in real time for DO, in a fashion similar to the USGS Real Time data available on the web. The current state of technology makes this very doable, and by combining efforts, i.e. sharing sampling points and data, this should be very cost effective. This is currently being done in Kansas. One of the short comings of the TMDL was the lack of enough good data and real time data from at least four points along the river would not only provide plenty of data points to model the river, but data to verify and/or calibrate the model and evaluate the permit limits now and in the future.

Finally, the permittees should be encouraged to help improve water quality upstream where non-point sources are the main problem. Discharging into a river that is already impaired is not permitted under state and federal law, so improving water quality above the point sources should be in the permittees best interest.

With the proposed limits, water quality in the Harpeth River during the summer low flow months will at best, not improve, and more likely, decline as more growth occurs. Imposing tighter limits now will most likely be much more cost effective than waiting for water quality to decline further and having draconian measures imposed in the future.

Our concern at HRWA is the health of the Harpeth River now and into the future. We believe this is achievable in spite of the explosive growth this area has been experiencing, but it takes forward thinking about more than the current state of the economy. The Harpeth River provides economic services to the communities that it flows through, both direct and indirect, and care needs to be taken to insure that it is able to continue, and even increase those services in the future.

Sincerely,



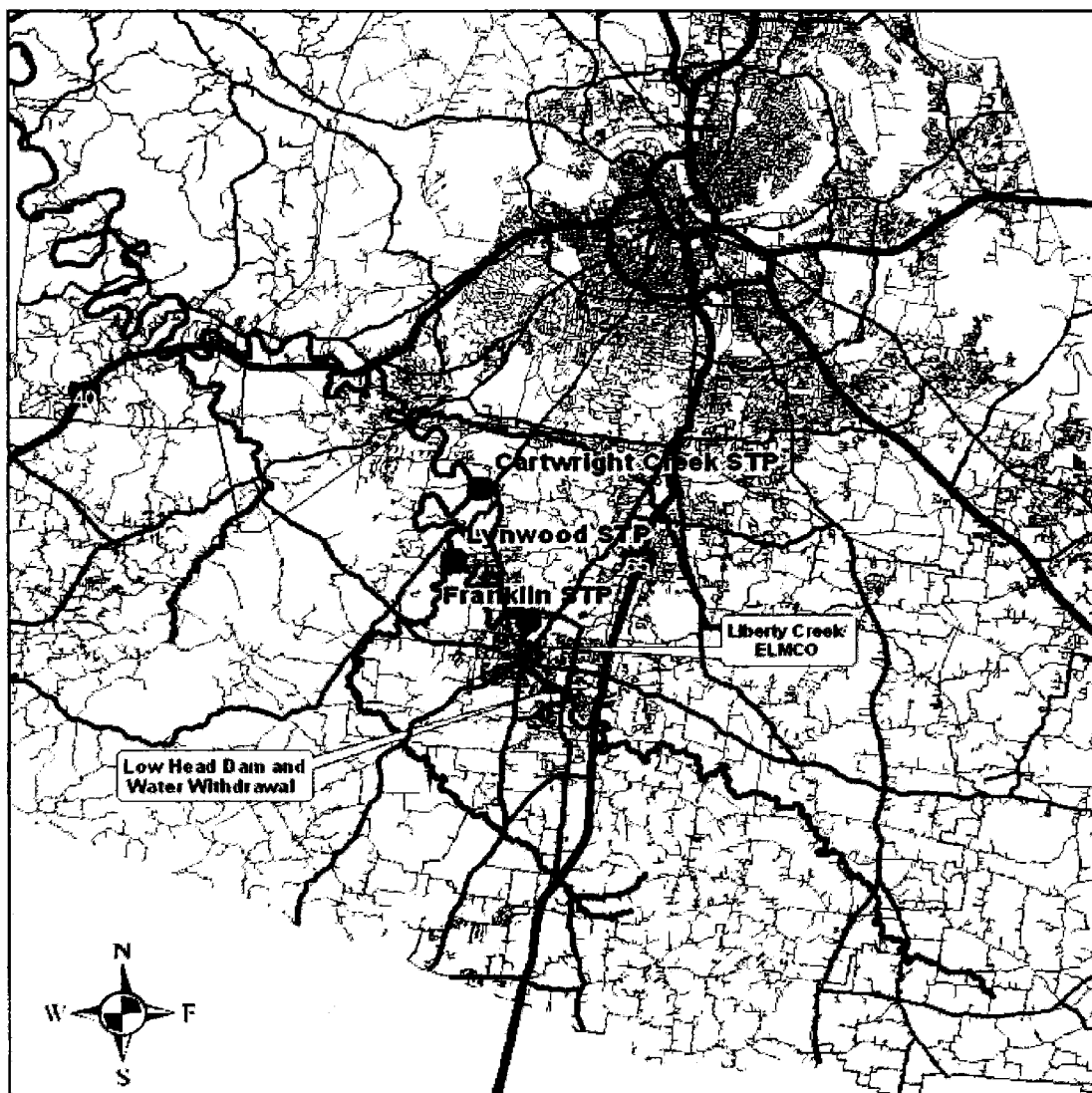
Michael Cain
Watershed Assessment and Restoration Manager
Harpeth River Watershed Association
michaelcain@harpethriver.org , (615) 790-9767 ext 102

Attachment:



**HARPETH RIVER
WATERSHED ASSOCIATION**

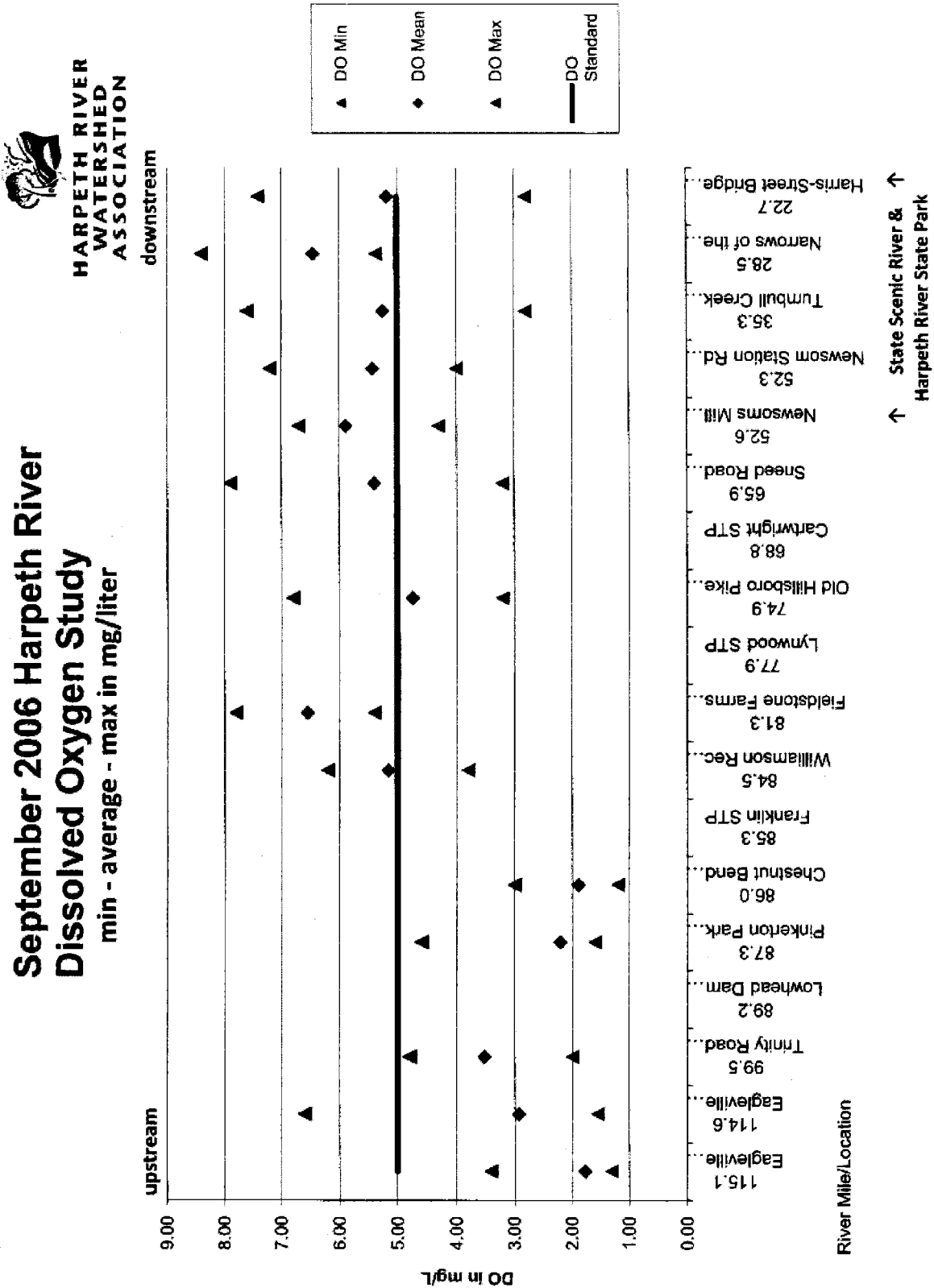
**Dissolved Oxygen Study Charts
2006, 2007, 2008**

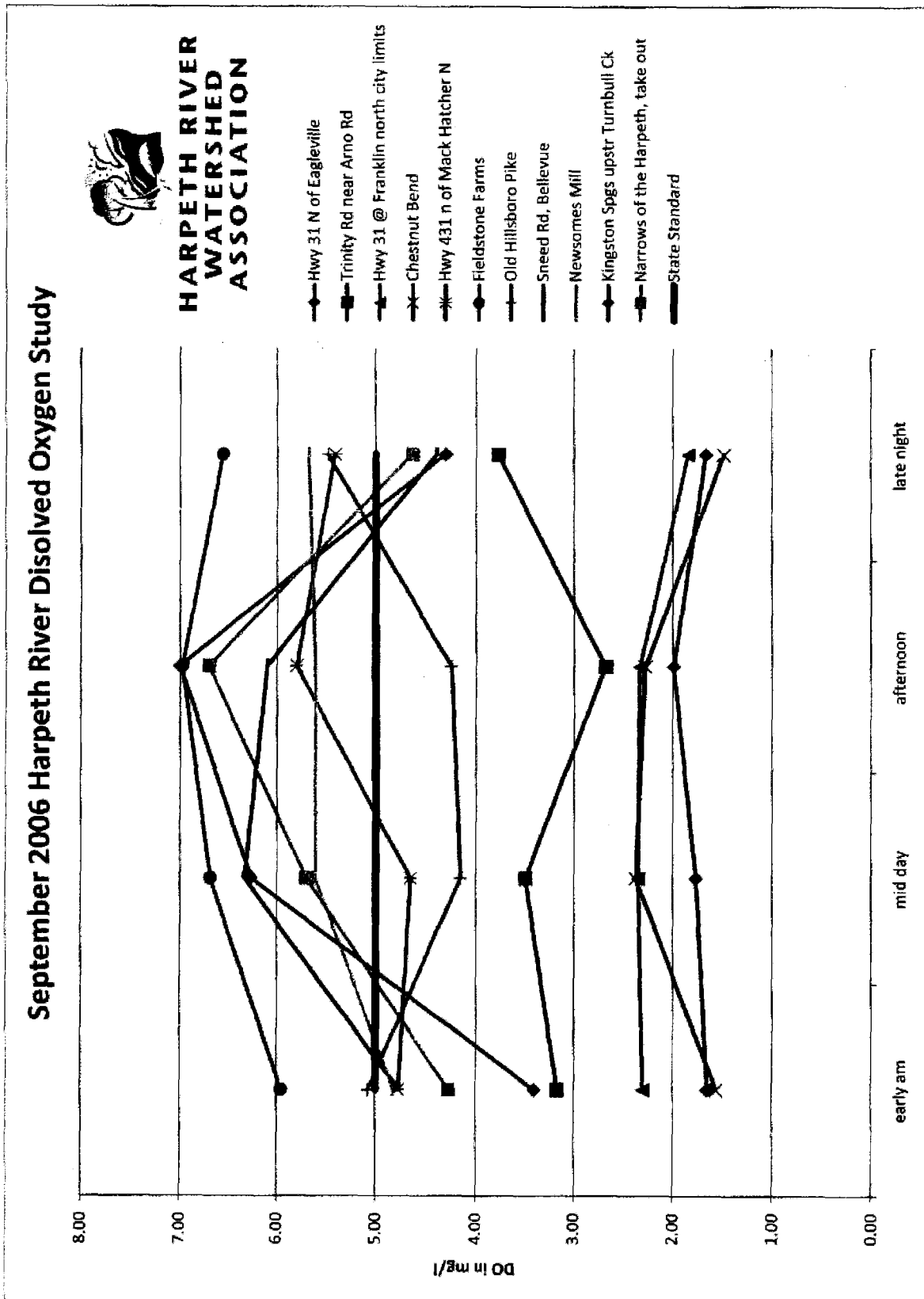


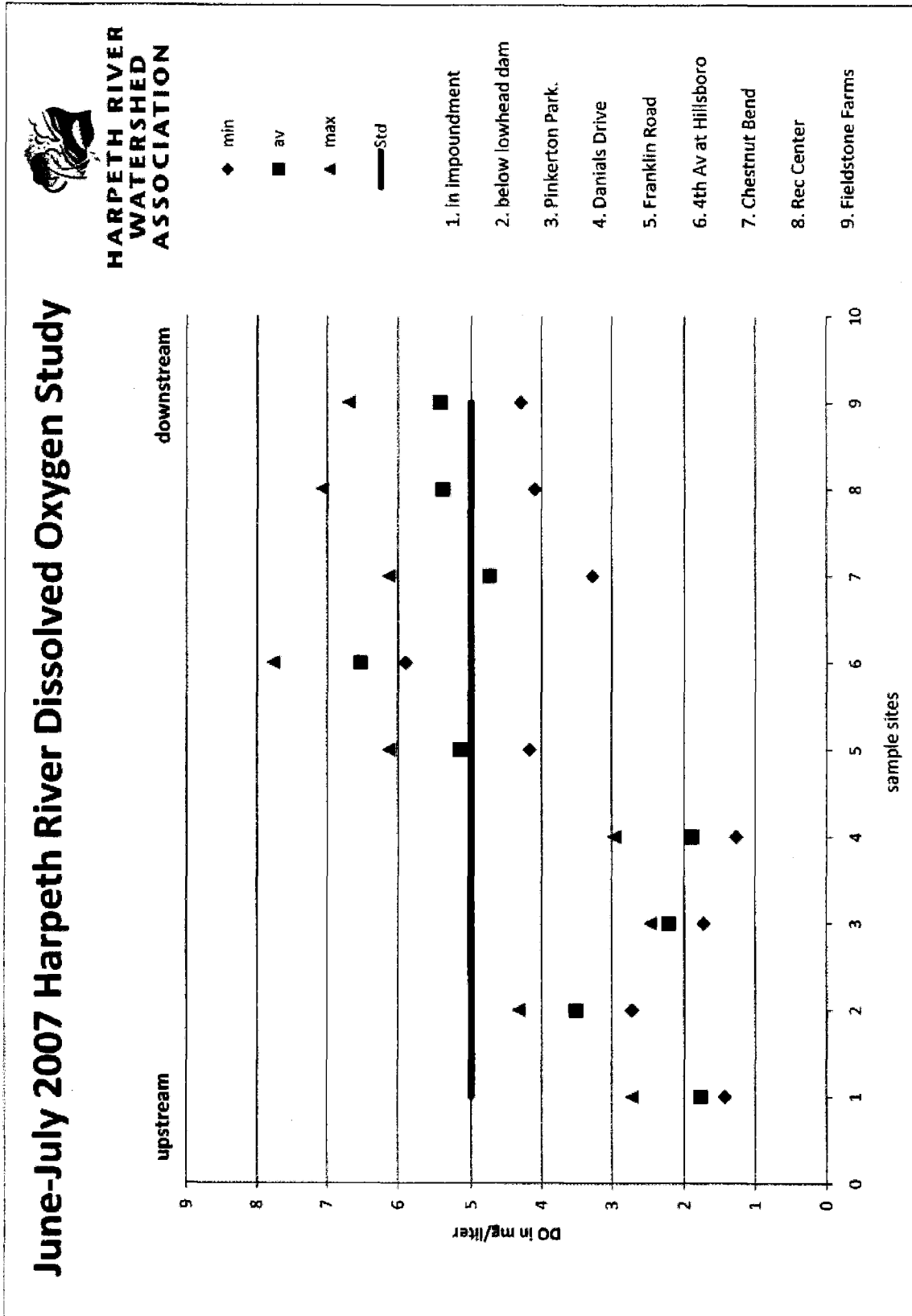
This map created for Harpeth River Watershed Association by M Cain using ESRI software and data from tngis.org and data gathered by HRWA staff.

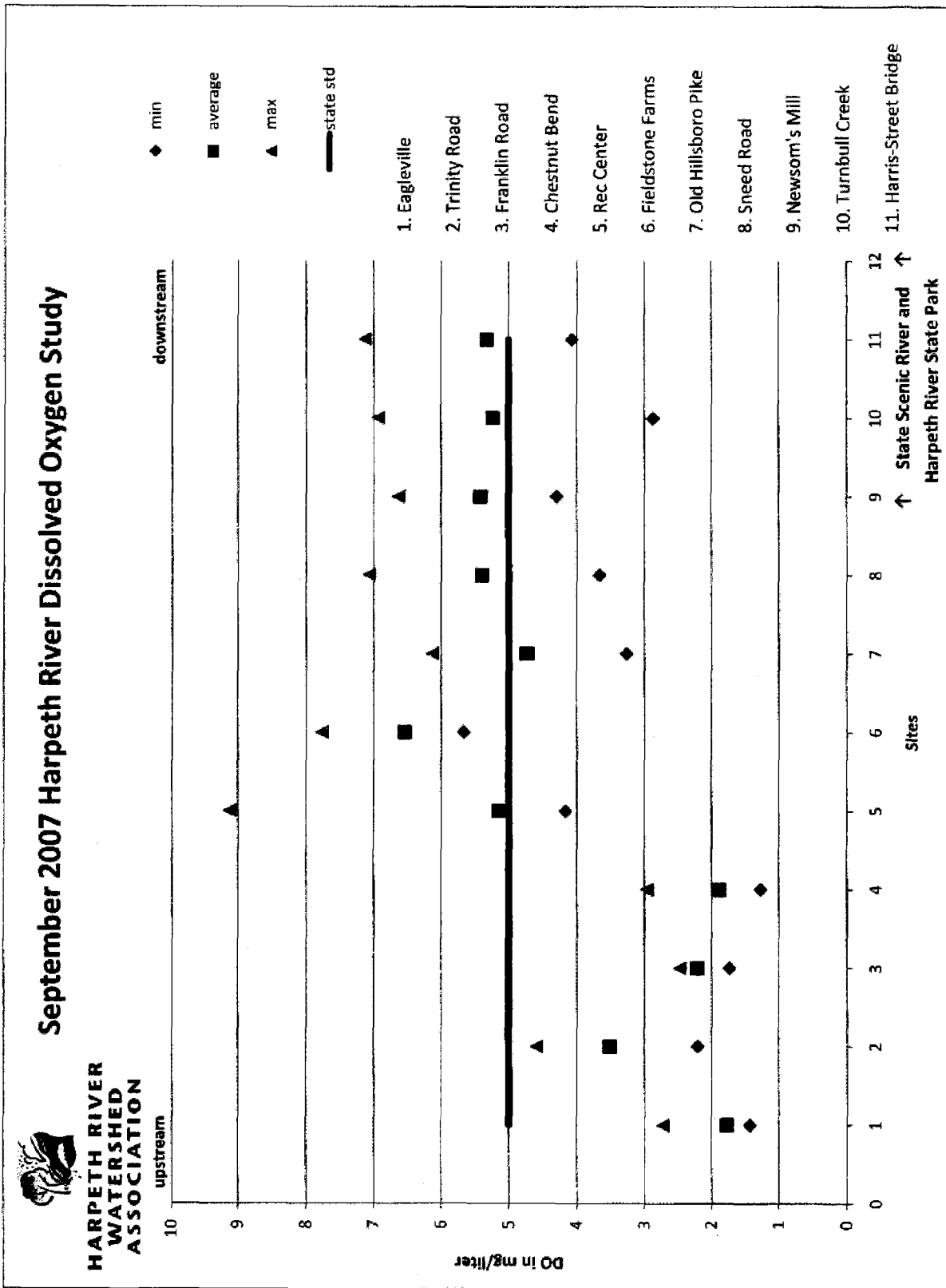
0 1 2 3 4 5 6 7 8 9 10 Miles

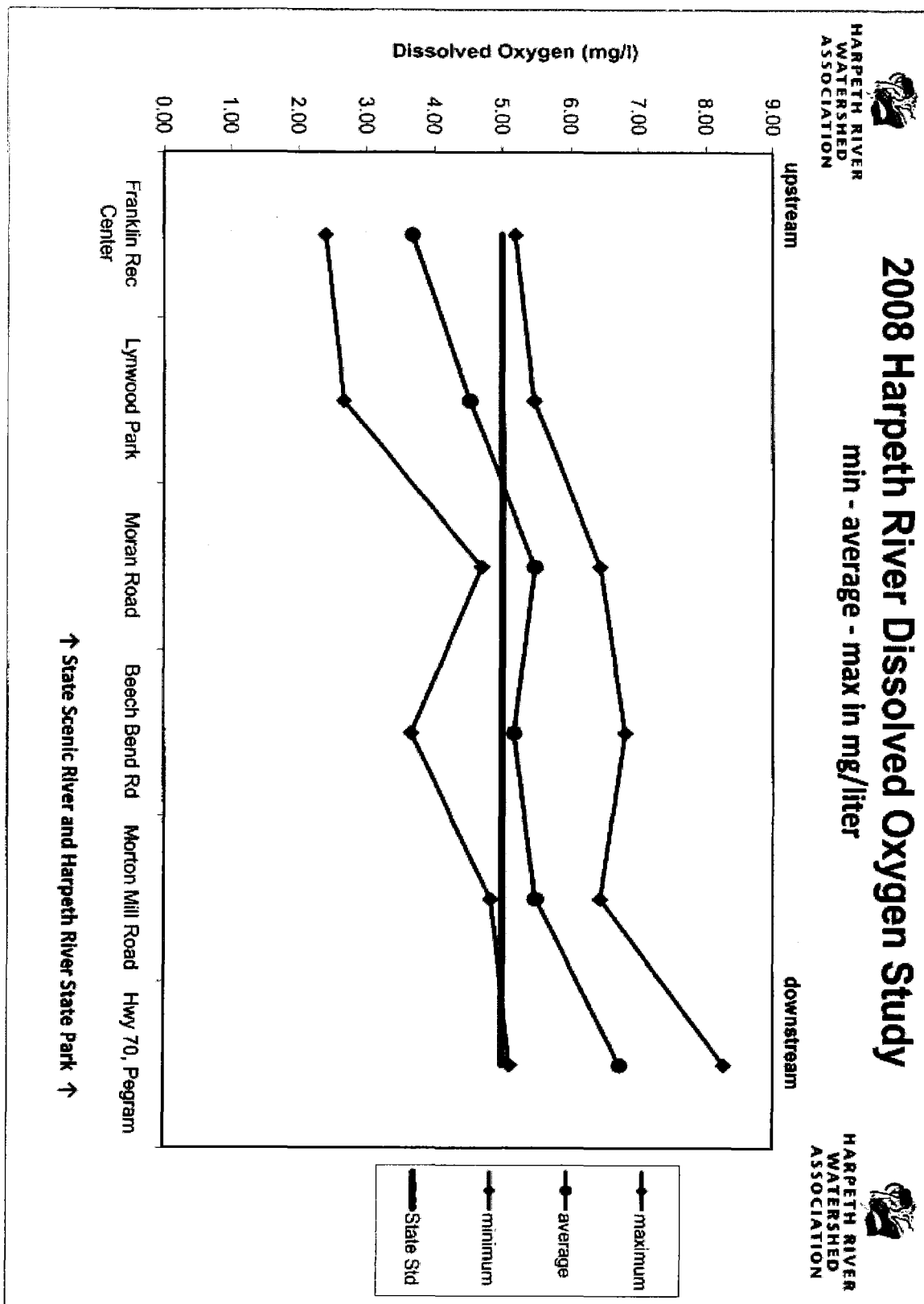
Studies by HRWA, including these charts are available at www.harpethriver.org/library



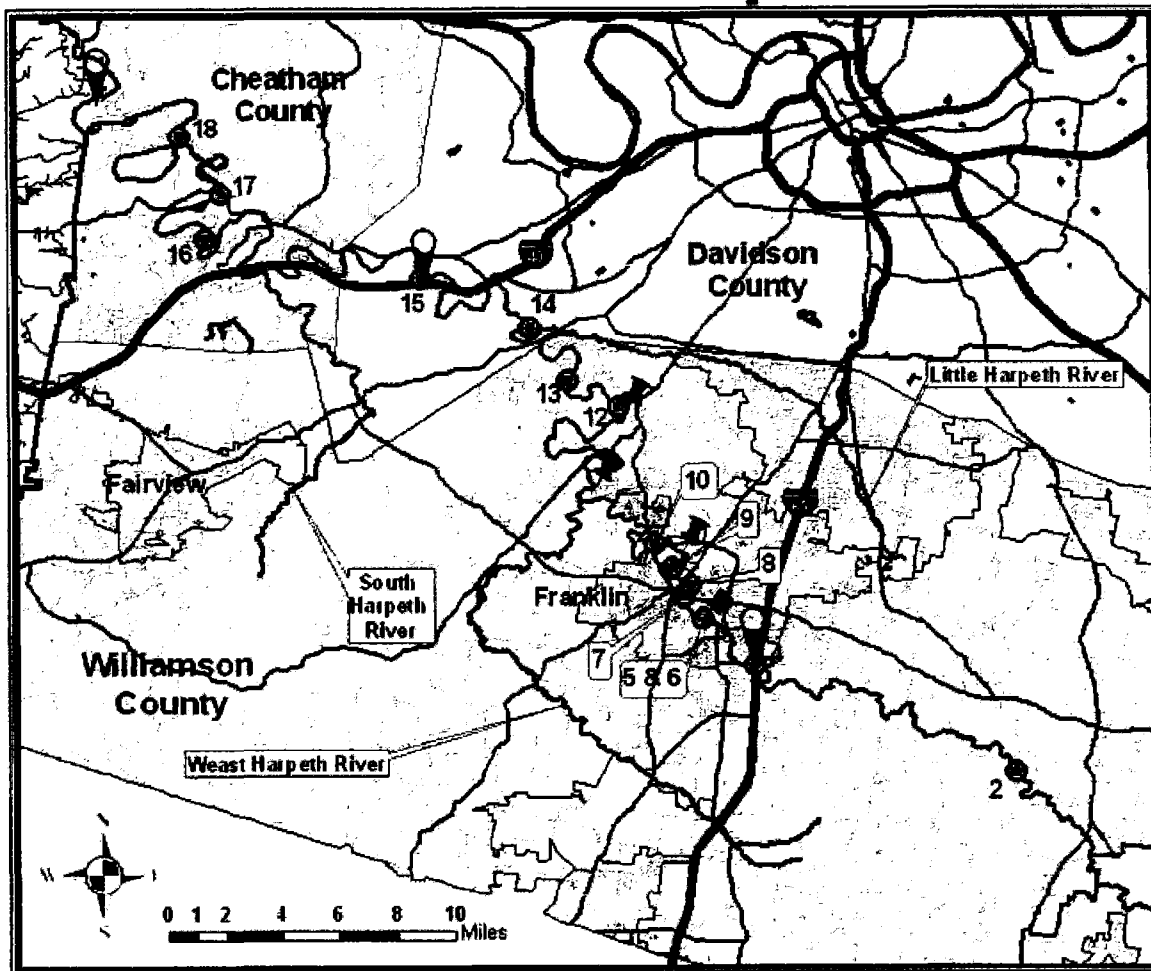








Harpeth River Watershed Association Fall 2007 Dissolved Oxygen Study Site Map Overview Map



Legend

- | | | |
|----------------------------|--------------------|---------------|
| TDEC 2007 DO Sites | HRWA DO Sites 9-07 | Harpeth River |
| Franklin WTP Intake | Cumberland River | Urban Areas |
| STP's in Harpeth watershed | Interstate | Roads |

This map was created for HRWA by Michael Cain using ESRI software and data from InGIS.org and from data generated by HRWA & TDEC staff

Division's Response For HRWA's Public Hearing Written Comments

EPA's TMDL addressed the three permittee discharges and with distinct allocations to each. Instream diurnal monitoring requirements are included in Franklin STP final permit. The permittee may decide to provide the data real time on the web. Franklin STP's final permit includes the IWMP development/implementation. Within the context of providing the most useful data, the division would agree with additional instream monitoring stations for the IWMP investigations. The division expects non-point sources to also be considered during the IWMP evaluations and the defining of upgrade options.

The HRWA layout drawings and dissolved oxygen graphs provide useful information that will be further evaluated and supplemented pursuant to Franklin STP's finalized permit.

Other – Public Hearing Written Comments

Several individuals sent the division emails regarding water quality/recreational Harpeth River concerns.

Division's Response For "Other" Public Hearing Written Comments

The division has provided additional information for those making written comments, and the finalized permits will be emailed to all interested participants.